

19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING	99=TSCA Inventory updat	

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data on the components.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523
NDA - No Data Available NA - Not Applicable

PETROLEUM RESIN
CAS64742161

< 10.0 % CALCIUM COMPLEX THICKENER

ADDITIVES INCLUDING THE FOLLOWING

CARBON-BLACK
CAS1333864 3.5mg/m3 ACGIH TLV
3.5mg/m3 OSHA TWA

GRAPHITE
CAS7782425 2.5mg/m3 ACGIH TLV
5mg/m3 OSHA TWA

MOLYBDENUM DISULFIDE
CAS1317335

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

CARBON-BLACK

is found on lists: 02,10,11,14,17,28,

GRAPHITE

is found on lists: 02,10,11,14,17,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523
NDA - No Data Available NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Black grease.

BOILING POINT: NA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: NDA

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately, observing precautions in Protective Equipment section.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Open Gear Lubricant

CONTAINING

< 70.0 % LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547

Revision Number: 1

Revision Date: 02/25/91

MSDS Number: 004523

NDA - No Data Available

NA - Not Applicable

RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

VENTILATION:

No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

5. FIRE PROTECTION

FLASH POINT: (COC) 475F (246C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NEPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 1

Revision Date: 02/25/91

MSDS Number: 004523

NDA - No Data Available

NA - Not Applicable

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

Not expected to be an ingestion problem, no first aid procedures are required.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

Revision Number: 1**Revision Date: 02/25/91****MSDS Number: 004523****NDA - No Data Available****NA - Not Applicable**

Emergency Number (800)457-2022 or (415)233-3737



Material Safety Data Sheet

CHEVRON Open Gear Lubricant

CPS253812

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: July 26, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to reflect name change from Chevron Open Gear Grease to current name.

1. PRODUCT IDENTIFICATION

CHEVRON Open Gear Lubricant

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER
OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS253812
PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

X-005051 (06-89)

Appendix33-000930

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061
Emergency No. 1-800-535-5053 (INFOTRAC)
Call nearest Sales Office for MSDS Information

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: MARATHON MAINTAINER

Date Issued: 08/06/91
Supercedes: NEW
National Item#: 2193XX

SECTION 2. INGREDIENTS CAS NUMBER PERCENT EXPOSURE LIMITS IN AIR OSHA PEL ACGIH TLV OTHER

*DIETHYLENE GLYCOL			NOT	NOT
ETHYL ETHER	111900	2	ESTABLISHED	ESTABLISHED
POLYETHOXYLATED			NOT	NOT
NONYL PHENOL	9016459	2	ESTABLISHED	ESTABLISHED

N/A = Not Applicable; N/D = Not Determined

*THESE MATERIALS ARE SUBJECT TO THE REPORTING REQUIREMENTS UNDER SARA
TITLE III, SECTION 313 AND 40 CER PART 372

SECTION 3. PHYSICAL DATA

Boiling Point (F): 212 Specific Gravity (Water=1): 1.0
Vapor Pressure (mm Hg.): N/D Percent Volatile (By Volume): 95
Vapor Density (Air=1): ND Evaporation Rate (Water =1): 1
Solubility in Water: SOLUBLE pH Range: 7.5
Appearance and Odor: YELLOWISH GREEN/SWEET SCENT

SECTION 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): NON-FLAMMABLE
Flammable Limits: LEL=N/D UEL=N/D
Extinguishing Media: CO2, DRY CHEMICAL, FOAM, WATER FOG

Special Fire Fighting Procedures: NORMAL FIRE FIGHTING PROCEDURES MAY BE
USED. COOL AND USE CAUTION WHEN APPROACHING OR HANDLING FIRE-EXPOSED
CONTAINERS.

Unusual Fire & Explosion Hazards: CONTAINERS MAY BURST IN HEAT.

SECTION 5. REACTIVITY DATA

Stability: STABLE

Incompatibility - Materials to Avoid: NONE KNOWN TO NSS

Hazardous Polymerization: WILL NOT OCCUR

Conditions to Avoid: NONE KNOWN TO NSS

Hazardous Decomposition Products: WHEN EXPOSED TO FIRE, PRODUCES NORMAL
PRODUCTS OF COMBUSTION.

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill Response: FOR SMALL SPILLS, DILUTE WITH WATER AND PICK UP WITH MOP
AND PAIL OR WET PICK UP VACUUM. FOR LARGE SPILLS, DIKE AREA TO CONTAIN
SPILL. CLEAN UP USING ABSORBENT MATERIAL. PLACE ALL CONTAMINATED
MATERIAL IN A CLOSED CONTAINER FOR DISPOSAL.

Product Disposal: WASTE FOR DILUTED PRODUCT MAY BE FLUSHED TO SEWER.
UNDILUTED PRODUCT RECOVERED FROM SPILLS MAY BE SENT TO LICENSED
DISPOSAL FACILITY TO BE DISPOSED OF IN ACCORDANCE WITH FEDERAL/STATE
REGULATIONS AND LOCAL ORDINANCES.

Container Disposal: TRIPLE RINSE EMPTY CONTAINER THOROUGHLY WITH WATER
AND DISCARD IN REGULAR TRASH COLLECTION IF ALLOWED BY LOCAL, STATE AND
FEDERAL REGULATIONS.

Emergency Number (800)457-2022 or (415)233-3737



Material Safety Data Sheet

CHEVRON Gear Compound EP ISO 320

CPS255072

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: August 15, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON Gear Compound EP ISO 320

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER
OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS255072
PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004709
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

X-000001 (NA-001)
Appendix33-000932

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 0**Revision Date: 02/01/91****MSDS Number: 004709****NDA - No Data Available****NA - Not Applicable**

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 421F (216C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 0

Revision Date: 02/01/91

MSDS Number: 004709

NDA - No Data Available

NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark green viscous liquid.

BOILING POINT: NA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.90 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 320 cSt @ 40C

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 0

Revision Date: 02/01/91

MSDS Number: 004709

NDA - No Data Available

NA - Not Applicable

100.0 % CHEVRON Gear Compound EP ISO 320

CONTAINING

> 97.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 3.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI

11. PRODUCT TOXICOLOGY DATA**EYE IRRITATION:**

Revision Number: 0	Revision Date: 02/01/91	MSDS Number: 004709
NDA - No Data Available	NA - Not Applicable	

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004709
NDA - No Data Available NA - Not Applicable



Emergency Number (800)457-2022 or (415)233-3737

Material Safety Data Sheet

CHEVRON Open Gear Lubricant Grade 100 CB

CPS253815

Page 1 of 7

FRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLERIDGE
PORTLAND, OR 97210

Print Date: August 15, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to update section 1 (Product Information), 3 (Immediate Health Effects) and 4 (Protective Equipment).

1. PRODUCT IDENTIFICATION

CHEVRON Open Gear Lubricant Grade 100 CB

CAUTION: - REPEATED AND PROLONGED BREATHING OF VAPOR OR CONTACT
WITH SKIN MAY BE HARMFUL
- KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS253815
PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If respiratory irritation or any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

Not expected to be an ingestion problem, no first aid procedures are required.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation.

DERMAL TOXICITY:

The dermal toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if absorbed through the skin. The degree of injury will depend on the amount absorbed.

RESPIRATORY/INHALATION:

The inhalation toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if inhaled. The degree of injury will depend on the airborne concentration and duration of exposure. The target organ(s) is the nervous system. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing. This hazard evaluation is based on the known toxicity of the ingredients in this substance. Read the Additional Health Data section (12) of this document for more information.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

Revision Number: 1

Revision Date: 04/25/91

MSDS Number: 004729

NDA - No Data Available

NA - Not Applicable

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

If operating conditions result in airborne mists or vapors of this material, the use of an approved respirator is recommended.

VENTILATION:

No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

5. FIRE PROTECTION

FLASH POINT: (COC) 580F (325C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NDA Upper: NDA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Incomplete combustion can produce carbon monoxide. Combustion may produce toxic compounds of chlorine.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

The solvent may thermally decompose to toxic phosgene gas and corrosive hydrochloric acid.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

Revision Number: 1

Revision Date: 04/25/91

MSDS Number: 004729

NDA - No Data Available

NA - Not Applicable

INCOMPATIBILITY:

The solvent reacts violently with alkali and with various metal powders.

SPECIAL PRECAUTIONS:

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed. DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Black grease with chloroform-like odor.

BOILING POINT: NA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: NDA

VAPOR PRESSURE: NDA

PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NDA

VISCOSITY: 410 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately, observing precautions in Protective Equipment section.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 1

Revision Date: 04/25/91

MSDS Number: 004729

NDA - No Data Available

NA - Not Applicable

100.0 % CHEVRON Open Gear Lubricant Grade 100 CB

CONTAINING

< 35.0 % RESIDUAL OILS SOLVENT DEWAXED
CAS64742627

< 35.0 % RESIDUES VACUUM
CAS64741566

> 10.0 % PETROLEUM RESIN
CAS64742161

20.0 % 1,1,1-TRICHLOROETHANE
CAS71556 A toxic chemical subject to the reporting requirements of
Section 313 of Title III of the Superfund Amendments and
Reauthorization Act of 1986 and 40 CFR Part 372.
350ppm ACGIH TLV
450ppm ACGIH STEL
350ppm OSHA TWA
450ppm OSHA STEL
CERCLA 302.4 RQ=1000 POUNDS

< 2.0 % ADDITIVES

TLV - Threshold Limit Value
STEL - Short-term Exposure Limit
RQ - Reportable Quantity
CC - Chevron Chemical Company

TWA - Time Weighted Average
TPQ - Threshold Planning Quantity
CPS - CUSA Product Code
CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NDA
DOT HAZARD CLASS: NDA
DOT IDENTIFICATION NUMBER: NDA

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; YES
2. Delayed (Chronic) Health Effects; YES
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory
lists indicated by the number below the component name:

1,1,1-TRICHLOROETHANE
is found on lists: 01,02,10,11,12,14,15,17,18,21,24,26,28,

REGULATORY LISTS SEARCHED:

01=SARA 313

02=MASS RTK

03=NTP Carcinogen

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729
NDA - No Data Available NA - Not Applicable

04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data on the components.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains 1,1,1-trichloroethane which is considered to be of low acute and chronic toxicity by ingestion or by skin absorption. Inhalation of vapors at concentrations above the exposure standard has an anesthetic effect, producing signs and symptoms of central nervous system depression which may include headache, dizziness, nausea, fainting and respiratory depression. Concentrations of 900 to 1000 ppm have produced temporary impairment of coordination. Obvious disturbances of equilibrium accompanied by headache and lassitude have been observed in humans at concentrations above 1700 ppm. 1,1,1-Trichloroethane may also produce transient alterations in heart function such as decreased blood pressure and erratic heart beat. Note to Physician: 1,1,1-Trichloroethane can sensitize the myocardium to catecholamine-induced arrhythmias.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for

Revision Number: 1	Revision Date: 04/25/91	MSDS Number: 004729
NDA - No Data Available	NA - Not Applicable	

Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729
NDA - No Data Available NA - Not Applicable

Emergency Number (800)457-2022 or (415)233-3737



Material Safety Data Sheet

CHEVRON Open Gear Lubricant Grade 250 CB

CPS253817

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLERIDGE
PORTLAND, OR 97210

Print Date: August 15, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON Open Gear Lubricant Grade 250 CB

CAUTION: - PROLONGED OR REPEATED SKIN CONTACT CAN BE HARMFUL
- VAPOR HARMFUL
- KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS253817
PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

X-DOS051 (06-89)

Appendix33-000945

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If respiratory irritation or any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

Not expected to be an ingestion problem, no first aid procedures are required.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

SKIN IRRITATION:

Expected to cause no more than minor skin irritation, but prolonged or frequently repeated skin contact may be harmful. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

RESPIRATORY/INHALATION:

The inhalation toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if inhaled. The degree of injury will depend on the airborne concentration and duration of exposure. The target organ(s) is the nervous system. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing. This hazard evaluation is based on the known toxicity of the ingredients in this substance. Read the Additional Health Data section (12) of this document for more information.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This

Revision Number: 0	Revision Date: 02/09/91	MSDS Number: 004730
NDA - No Data Available	NA - Not Applicable	

hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

Unless ventilation is adequate to keep airborne concentrations below recommended exposure standards, approved respiratory protection should be worn.

VENTILATION:

No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

5. FIRE PROTECTION

FLASH POINT: (COC) 580F (325C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NDA Upper: NDA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS: Health 1; Flammability 1; Reactivity 0; Other NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Incomplete combustion can produce carbon monoxide. Combustion may produce toxic compounds of chlorine

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

The solvent may thermally decompose to toxic phosgene gas and corrosive hydrochloric acid.

STABILITY:

Revision Number: 0

Revision Date: 02/09/91

MSDS Number: 004730

NDA - No Data Available

NA - Not Applicable

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

The solvent reacts violently with alkali and with various metal powders.

SPECIAL PRECAUTIONS:

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. DO NOT USE OR STORE

near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA.

Keep container closed. DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Black grease with chloroform-like odor.

BOILING POINT: NA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: NDA

VAPOR PRESSURE: NDA

PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NDA

VISCOSITY: 937 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately, observing precautions in Protective Equipment section.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of

Revision Number: 0

Revision Date: 02/09/91

MSDS Number: 004730

NDA - No Data Available

NA - Not Applicable

the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Open Gear Lubricant Grade 250 CB

CONTAINING

< 15.0 % RESIDUAL OILS SOLVENT DEWAXED
CAS64742627

< 60.0 % RESIDUES VACUUM
CAS64741566

< 10.0 % PETROLEUM RESIN
CAS64742161

< 20.0 % 1,1,1-TRICHLOROETHANE
CAS71556 A toxic chemical subject to the reporting requirements of
Section 313 of Title III of the Superfund Amendments and
Reauthorization Act of 1986 and 40 CFR Part 372.
350ppm ACGIH TLV
450ppm ACGIH STEL
350ppm OSHA TWA
450ppm OSHA STEL

< 2.0 % ADDITIVES

TLV - Threshold Limit Value
STEL - Short-term Exposure Limit
RQ - Reportable Quantity
CC - Chevron Chemical Company

TWA - Time Weighted Average
TPQ - Threshold Planning Quantity
CPS - CUSA Product Code
CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NDA

DOT HAZARD CLASS: NDA

DOT IDENTIFICATION NUMBER: NDA

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; YES
2. Delayed (Chronic) Health Effects; YES
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

1,1,1-TRICHLOROETHANE

is found on lists: 01,02,10,11,14,15,17,18,21,24,26,28,

REGULATORY LISTS SEARCHED:

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730
NDA - No Data Available NA - Not Applicable

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data on the components.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains 1,1,1-trichloroethane which is considered to be of low acute and chronic toxicity by ingestion or by skin absorption. Inhalation of vapors at concentrations above the exposure standard has an anesthetic effect, producing signs and symptoms of central nervous system depression which may include headache, dizziness, nausea, fainting and respiratory depression. Concentrations of 900 to 1000 ppm have produced temporary impairment of coordination. Obvious disturbances of equilibrium accompanied by headache and lassitude have been observed in humans at concentrations above 1700 ppm. 1,1,1-Trichloroethane may also produce transient alterations in heart function such as decreased blood pressure and erratic heart beat. Note to Physician: 1,1,1-Trichloroethane can sensitize the myocardium to catecholamine-induced arrhythmias.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils

Revision Number: 0	Revision Date: 02/09/91	MSDS Number: 004730
NDA - No Data Available	NA - Not Applicable	

have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730
NDA - No Data Available NA - Not Applicable



Material Safety Data Sheet

CHEVRON SRI Grease NLGI 2

CPS254504

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: August 15, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON SRI Grease NLGI 2

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER
OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS254504
PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004753
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: Injection under the skin of materials similar to this product is associated with accidents involving high-pressure equipment. When ejected from this type of equipment, the material can easily penetrate the skin and leave a small, sometimes bloodless, puncture wound. Yet, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain in the affected part. Immediate treatment at surgical emergency center is recommended.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. May cause skin discoloration. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

RESPIRATORY/INHALATION:

Revision Number: 0**Revision Date: 02/09/91****MSDS Number: 004753****NDA - No Data Available****NA - Not Applicable**

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

VENTILATION:

No special ventilation is necessary.

5. FIRE PROTECTION

FLASH POINT: NDA

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of nitrogen. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

Revision Number: 0

Revision Date: 02/09/91

MSDS Number: 004753

NDA - No Data Available

NA - Not Applicable

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbons; insoluble in water.

APPEARANCE: Green grease.

BOILING POINT: NA

MELTING POINT: NDA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.92 @ 20/20C

VAPOR PRESSURE: <1 mm Hg @ 40C

PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): MA

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control

Revision Number: 0

Revision Date: 02/09/91

MSDS Number: 004753

NDA - No Data Available

NA - Not Applicable

Act Chemical Substances Inventory.

This substance is subject to the provisions of the Pennsylvania Worker and Community Right-to-Know Act. Specific chemical identities are trade secret under the provisions of 35 Pennsylvania Statute Section 7311.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON SRI Grease NLGI 2

CONTAINING

> 85.0 % DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
CAS64742547

< 15.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004753
NDA - No Data Available NA - Not Applicable

29=OSHA CEILING

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils refined by a combination of severe hydrocracking and hydrotreating. The potential of paraffinic base oil prepared by this process to cause cancer has not been specifically addressed by the OSHA Hazard Communication Standard (29 CFR 1910.1200), the International Agency for Research on Cancer (IARC), nor the National Toxicology Program (NTP) Annual Report. However, the process conditions, chemical analyses, and the results of mutagenicity tests all support our opinion that this oil should not cause skin cancer.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004753
NDA - No Data Available NA - Not Applicable

8-3-92, #59441, michel

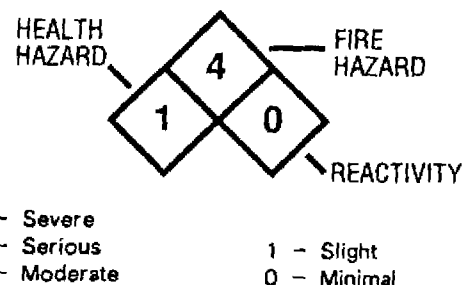
**Suburban
Propane****MATERIAL SAFETY DATA SHEET**

05-01-300

EFFECTIVE AUGUST, 1991

Suburban Propane
P.O. Box 206
Whippany, NJ 07981TRANSPORTATION CHEMTREC NO.
EMERGENCY NO.: (800) 424-9300GENERAL SAFETY DEPT.
INFORMATION: (201) 887-5300

DANGER! Extremely flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and all other ignition sources. Vapor reduces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air and may collect at low levels. Liquid may cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid prolonged breathing of vapor. Keep container valve closed when not in use.

**SECTION I - IDENTIFICATION**

PRODUCT: Commercial Propane CHEMICAL FAMILY: Paraffinic Hydrocarbon
SYNONYMS: Liquefied Petroleum Gas; LP-Gas; LPG CHEMICAL FORMULA: C₃H₈

SECTION II - INGREDIENTS

MATERIAL	CAS NUMBER	PERCENT
ETHANE	74-84-0	0-5.0
PROPANE	74-98-6	87.5-100
PROPYLENE	115-07-1	0-5.0
BUTANES	Various	0-2.5
	75-08-01	0-50 ppm
ETHYL MERCAPTAN		

SECTION III - HEALTH INFORMATION

INHALATION: Asphyxiant in high concentrations due to dilution of available oxygen. At excessive vapor concentrations, this product has anesthetic, asphyxiating properties and may cause sleepiness. At levels above 100,000 ppm (i.e. 10%), propane is mildly irritating to the respiratory tract and may result in dizziness, headache, drowsiness, nausea, shortness of breath, muscular incoordination, excessive salivation, disorientation, vomiting, and excitation. In extreme cases, convulsions, unconsciousness and death may occur as a result of asphyxiation. Persons with chronic respiratory disease should avoid exposure.

INGESTION: Liquid may cause freeze burn similar to frostbite. Ingestion not expected to occur in normal use.

EYE CONTACT: Liquid may cause freeze burn similar to frostbite.

SKIN CONTACT: Liquid may cause freeze burn similar to frostbite.

OTHER: Product is not listed by IARC, NTP or OSHA as a potential carcinogen. Propane and some of the minor components have been reported to be cardiac sensitizers in experiments.

SECTION IV - OCCUPATIONAL EXPOSURE LIMITS

MATERIAL	PEL/TWA	TLV/TWA
ETHANE	Not Established	Simple Asphyxiant
PROPANE	1000 ppm	Simple Asphyxiant
PROPYLENE	Not Established	Simple Asphyxiant
BUTANES	800 ppm	800 ppm

SARA TITLE III INFORMATION:

This product may contain over 1.0% propylene. This is subject to the reporting requirements of Section 313.

HAZARD CATEGORY FOR SECTION 311/312 REPORTING:

Immediate (acute) health hazard. Fire hazard. Sudden release of pressure hazard.

RCRA INFORMATION:

This product, when disposed of by incineration or flaring, is defined as an ignitable hazardous waste in Federal regulations. Hazardous waste number is D001. Refer to latest Federal or State regulations regarding proper means of disposal.

TSCA STATUS:

All components of this product are listed on the TSCA inventory.

SECTION XII - HANDLING AND STORAGE PRECAUTIONS

Store in an authorized location (outside, detached storage is preferred with adequate ventilation. Isolate from heat and ignition sources. Isolate from combustible materials. Provide separate storage locations for other compressed or flammable gases. Inspect cylinders frequently for leaks, dents, gouges and corrosion with emphasis on bottom of cylinder. Store cylinders in upright position or with pressure relief valves in vapor space. Do not drop or abuse cylinders. Keep container valve closed and plugged when not in use. Install protective caps when cylinders are not connected for use. Empty containers retain some residue, so they should be treated as if they were full.

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which the company bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

PREPARED BY: Regulatory Department
P.O. Box 206
Whippany, NJ 07981

ISSUED: 08/91
SUPERSEDES: 05/90

**Suburban
Propane**
Quality

MATERIAL SAFETY DATA SHEET

05-01-300

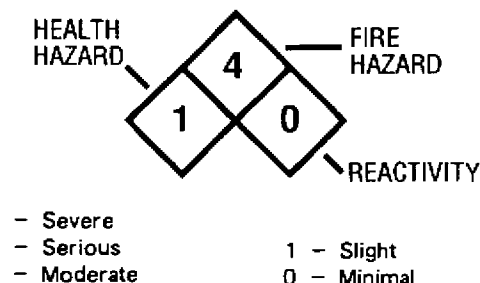
EFFECTIVE AUGUST, 1991

Suburban Propane
P.O. Box 206
Whippany, NJ 07981

TRANSPORTATION
EMERGENCY NO.: CHEMTREC NO.
(800) 424-9300

GENERAL SAFETY DEPT.
INFORMATION: (201) 887-5300

DANGER! Extremely flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and all other ignition sources. Vapor reduces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air and may collect at low levels. Liquid may cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid prolonged breathing of vapor. Keep container valve closed when not in use.

**SECTION I - IDENTIFICATION**

PRODUCT: Commercial Propane CHEMICAL FAMILY: Paraffinic Hydrocarbon
SYNONYMS: Liquefied Petroleum Gas; LP-Gas; LPG CHEMICAL FORMULA: C₃H₈

SECTION II - INGREDIENTS

MATERIAL	CAS NUMBER	PERCENT
ETHANE	74-84-0	0-5.0
PROPANE	74-98-6	87.5-100
PROPYLENE	115-07-1	0-5.0
BUTANES	Various	0-2.5
ETHYL MERCAPTAN	75-08-01	0-50 ppm

SECTION III - HEALTH INFORMATION

INHALATION: Asphyxiant in high concentrations due to dilution of available oxygen. At excessive vapor concentrations, this product has anesthetic, asphyxiating properties and may cause sleepiness. At levels above 100,000 ppm (i.e. 10%), propane is mildly irritating to the respiratory tract and may result in dizziness, headache, drowsiness, nausea, shortness of breath, muscular incoordination, excessive salivation, disorientation, vomiting, and excitation. In extreme cases, convulsions, unconsciousness and death may occur as a result of asphyxiation. Persons with chronic respiratory disease should avoid exposure.

INGESTION: Liquid may cause freeze burn similar to frostbite. Ingestion not expected to occur in normal use.

SKIN CONTACT: Liquid may cause freeze burn similar to frostbite.

EYE CONTACT: Liquid may cause freeze burn similar to frostbite.

OTHER: Product is not listed by IARC, NTP or OSHA as a potential carcinogen. Propane and some of the minor components have been reported to be cardiac sensitizers in experiments.

SECTION IV - OCCUPATIONAL EXPOSURE LIMITS

MATERIAL	PEL/TWA	TLV/TWA
ETHANE	Not Established	Simple Asphyxiant
PROPANE	1000 ppm	Simple Asphyxiant
PROPYLENE	Not Established	Simple Asphyxiant
BUTANES	800 ppm	800 ppm

SECTION V - EMERGENCY AND FIRST AID PROCEDURE**FOR OVEREXPOSURE BY:**

INHALATION: Remove victim from further exposure and into fresh air. Provide oxygen if breathing is difficult. If victim is unconscious, get prompt medical attention.

EYE CONTACT: For contact with liquid, flush immediately with water. Obtain immediate medical attention.

INGESTION: If swallowed, get immediate medical attention.

SKIN CONTACT: If freeze burn occurs, remove contaminated clothes, shoes and jewelry. Immerse burned area in warm (not hot) water. Keep immersed. Get prompt attention.

SECTION VI - PHYSICAL DATA

BOILING POINT: -44 F
MELTING POINT: N/A
VAPOR PRESSURE: 196 psig @ 100 F
SPECIFIC GRAVITY (H₂O = 1): 0.504
VAPOR DENSITY (AIR = 1): 1.50
SOLUBILITY IN WATER: Slight, 0.1 to 1.0%
APPEARANCE AND ODOR: Colorless, odorless in natural form.

ODORANT WARNING

Odorant is added to aid in detection of leaks. One common odorant is ethyl mercaptan, CAS No. 75-08-1. Odorant has a foul, skunk like odor. The odorant is effective in most instances, but not everyone can smell the odor. The ability of people to detect odors varies widely. Also, certain chemical reactions with material in the propane system can reduce the propane odor level. No odorant will be 100% effective in all circumstances. If odor level appears to be weak, notify propane supplier immediately.

SECTION VII - FIRE AND EXPLOSION HAZARDS

FLASH POINT & METHOD USED: -156 F (estimated)
IGNITION TEMPERATURE IN AIR: 920 - 1,120 F
FLAMMABLE LIMITS IN AIR, % BY VOLUME: LOWER: 2.2% UPPER: 9.6%
NFPA RATING (Under Fire Conditions. Does not apply to exposure hazards other than during fire):
HEALTH: 1 Slightly toxic
FIRE: 4 Extremely flammable
REACTIVITY: 0 Stable

FIRE FIGHTING PROCEDURES:

Eliminate sources of ignition. Evacuate area. Notify fire department. Allow only trained, properly protected personnel in area. Shut off source of gas, if possible. Allow fire to burn itself out after gas flow is shut off. If gas flow cannot be shut off, do not extinguish fire. Allow fire to burn itself out using high volume water supply to cool heat-exposed pressure containers and nearby equipment. Approach a flame enveloped container from the side, never the head ends. Use extreme caution when applying water to a container which has been exposed to heat or flame for more than a short time. For uncontrollable fires and when flame is impinging on container, withdraw all personnel and evacuate vicinity immediately.

USUAL FIRE & EXPLOSION HAZARDS:

Firefighters should wear self-contained breathing apparatus in the positive pressure mode with a full facepiece when there is a possibility of exposure to smoke, fumes or hazardous decomposition products. Uncontrolled vapors spread rapidly, are heavier than air and are extremely flammable.

SECTION VIII - REACTIVITY

STABILITY: Stable
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS & MATERIALS TO AVOID: Keep away from high heat, sparks, open flame, strong oxidizing agents.
HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion may yield carbon monoxide, a toxic gas.

SECTION IX - EMPLOYEE PROTECTION**CONTROL MEASURES:**

Use local and dilution ventilation to maintain exposures below acceptable criteria.

RESPIRATORY PROTECTION:

If concentrations are high enough to warrant supplied-air or self-contained breathing apparatus, atmosphere may be flammable (see Section VII). Appropriate precautions must be taken regarding flammability. For situations where flammability has been safely addressed and where control measures are not feasible or sufficient to achieve full conformance with acceptable criteria (Section IV), use NIOSH/MSHA approved respiratory protection (supplied-air or self-contained breathing apparatus as appropriate). Respirators should be selected based on form and concentration of contaminant in air and in accordance with OSHA (29 CFR 1910.134).

PROTECTIVE CLOTHING

Avoid skin contact with liquid because of possibility of freeze burn. Wear gloves and protective clothing which are impervious to the product for the duration of the anticipated exposure.

EYE PROTECTION:

Use chemical safety goggles meeting the specifications of ANSI Z87.1 when connecting or disconnecting lines under pressure. Spectacle type safety glasses do not provide satisfactory protection.

SECTION X - ENVIRONMENTAL PROTECTION**ENVIRONMENTAL EFFECTS:**

Avoid uncontrolled releases of this material. Liquid release will have possible effect on plant and animal life. Large liquid release will quickly vaporize to produce a large, vapor cloud. Vapor cloud is both a fire and asphyxiation hazard.

SPILL OR LEAK PROCEDURES:

Product is extremely flammable. Vapor is heavier than air and may collect at lower levels. Flammable concentrations may be present below nose level. If there is a leak but no fire, do not ignite the escaped gas. Eliminate all ignition sources. Do not smoke, use a nearby phone or turn electrical switches on and off. Evacuate area. If possible, remove leaking container to safe area. Stop flow of gas or allow vapor to disperse in a safe area. Water spray can be used to help dilute vapor concentration in air.

WASTE DISPOSAL:

Dispose of gas in accordance with applicable laws and regulations. Vent vapor in a safe location and insure that gas dissipates below the lower flammable limit. Controlled burning is preferred.

SECTION XI - REGULATORY INFORMATION

DOT PROPER SHIPPING NAME: Liquefied Petroleum Gas
DOT HAZARD CLASS: Flammable Gas
DOT I.D. NUMBER: UN 1075
DOT EMERGENCY RESPONSE GUIDE: See Guide No. 22

HMIS RATING	
Health	1
Flammability	1
Reactivity	0

NFPA Rating	
Health	1
Flammability	1
Reactivity	0

MSDS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: **BLUE GASKET**

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufactured For: DYNACCO, INC. Address (Number, Street, City, State, and ZIP Code) 17461 147TH ST S.E. MONROE, WA 98272	Emergency Telephone Number CALL CHEM-TEL (800) 255-3924 Telephone Number for Information (360) 794-8974 Date Prepared OCT 11, 1991
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Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Names(s))	OSHA PEL	ACGIH TLV	STEL	%(optional)
Methyltriacetoxysilane (4253-34-3)	SEE BELOW			2
Ethyltriacetoxysilane (17689-77-9)	SEE BELOW			2
Silica (7631-86-9)	20ppmcf	10mg/m ³	-	9
Polymer (70131-67-8)	-	-	-	87

Reserve limits for Acetic Acid formed during curing upon exposure to water or humid air.

OSHA PEL - TWA 10ppm, ACGIH TLV - TWA 10ppm, STEL - 15ppm.

Outer compartment contains a flammable hydrocarbon propellant (Propane/Isobutane/n-Butane blend)

All chemical compounds marked with an Asterisk () are toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372. You must notify each person to whom this mixture or trade name product is sold. This statement must remain a part of this Material Safety Data Sheet.

Section III - Physical/Chemical Characteristics

Boiling Point	Range	NA	Specific Gravity (H ₂ O = 1)	1.04
Vapor Pressure PSIG @ 70°F		66	Melting Point	NA
Vapor Density (AIR = 1)	Heavier than Air	NA	Evaporation Rate	<1
Solubility in Water	NIL		Appearance and Odor	Blue Paste/Slight Medicinal Odor

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	212°F TCC	Flammable Limits	LEL	UEL
Extinguishing Media	Use water fog, dry chemical or carbon dioxide		ND	ND
Special Fire Fighting Procedures	cans may rupture when heated			
Unusual Fire and Explosion Hazards	Heated cans may burst	SiO ₂ , CO ₂		

Stability	Unstable		Conditions to Avoid
	Stable	X	High Temperatures

Incompatibility (Materials to Avoid)

Water causes curing. Incompatible with strong oxidizers.

Hazardous Decomposition or Byproducts

Acetic Acid fumes, SiO_2 , CO_2 .

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will not Occur	X	None

Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes

Health Hazards (Acute and Chronic)

No injury from silica dust should occur during reasonable use. If use creates respirable particles, some respiratory systems injury may occur. This product, as with any chemical may enhance allergic conditions in certain people. No know chronic health effects, but unnecessary exposure to any chemical should be avoided. Cured sealant is non-hazardous.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	Presently not on any list		

Signs and Symptoms of Exposure Swallowing large amounts may cause digestive discomfort. Vapor over-exposure may irritate nose, throat and eyes seriously with moderate corneal injury and considerable redness lasting a week or more.

Medical Conditions

Generally Aggravated by Exposure: NONE KNOWN.

Emergency and First Aid Procedures

Flush eyes and skin with water for 15 minutes. Remove to fresh air.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Remove product and contain for salvage disposal.

Waste Disposal Method

Dispose in accordance with local, state and federal regulations.

Precautions to be Taken in Handling and Storing

Keep away from heat, sparks, or open flame. Store at temperatures below 120°F.

Other Precautions When spraying more than one half can continuously or more than one can consecutively, use NIOSH approved respirator.

Section VIII - Control Measures

Respiratory Protection (Specify Type)

Self contained breathing apparatus if above TLV limit exceeding.

Ventilation	Local Exhaust	Yes	Special	None
	Mechanical (General)	None	Other	None

Protective Gloves	None required if spraying	Eye Protection	Wear eye protection
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Other Protective Clothing or Equipment
Long sleeve and long pants

Work/Hygienic Practices: Do not smoke while using. Wash hands after use.

HMIS RATING	
Health	1
Flammability	1
Reactivity	0

NFPA Rating	
Health	1
Flammability	1
Reactivity	0

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: **RED GASKET**

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufactured For:

DYNACCO, INC.

Address (Number, Street, City, State, and ZIP Code)

17461 147TH ST S.E.

MONROE, WA. 98272

Emergency Telephone Number

CALL CHEM-TEL (800) 255-3924

Telephone Number for Information

(360) 794-8974

Date Prepared

OCT 11, 1991

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Names(s))	OSHA PEL	ACGIH TLV	STEL	% (optional)
Methyltriacetoxysilane (4253-34-3)	SEE BELOW			2
Ethyltriacetoxysilane (17639-77-9)	SEE BELOW			2
Silica (7631-86-9)	20ppmcf	10mg/m ³	-	9
Polymer (7-131-67-8)	-	-	-	66
Iron Oxide (1309-37-1)	10mg/m ³	5mg/m ³	-	1

Observe limits for Acetic Acid formed during curing upon exposure to water or humid air.

OSHA PEL - TWA 10ppm, ACGIH TLV - TWA 10ppm, STEL - 15ppm.

Outer compartment contains a flammable hydrocarbon propellant (Propane/Isobutane/n-Butane blend)

All chemical compounds marked with an Asterisk() are toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372. You must notify each person to whom this mixture or trade name product is sold. This statement must remain a part of this Material Safety Data Sheet.

Section III - Physical/Chemical Characteristics

Boiling Point Range	NA	Specific Gravity (H ₂ O = 1)	1.04
Vapor Pressure PSIG @ 70°F	66	Melting Point PH Liquid	NA
Vapor Density (AIR = 1) Heavier than Air	NA	Evaporation Rate (Butyl Acetate = 1)	<1
Solubility in Water NIL		Appearance and Odor Red Paste/Slight Medicinal Odor	

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used) 121°F TCC	Flammable Limits	LEL ND	UEL ND
Extinguishing Media Use water fog, dry chemical or carbon dioxide			
Special Fire Fighting Procedures cans may rupture when heated			
Unusual Fire and Explosion Hazards Heated cans may burst SiO ₂ , CO ₂			

Stability	Unstable		Conditions to Avoid
	Stable	X	High Temperatures

Incompatibility (Materials to Avoid)
Water causes curing. Incompatible with strong oxidizers.

Hazardous Decomposition or Byproducts
Acetic Acid fumes, SiO₂, CO₂.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will not Occur	X	None

Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes

Health Hazards (Acute and Chronic)
No injury from silica dust should occur during reasonable use. If use creates respirable particles, some respiratory systems injury may occur. This product, as with any chemical may enhance allergic conditions in certain people. No know chronic health effects, but unnecessary exposure to any chemical should be avoided. Cured sealant is non-hazardous.

Carcinogenicity: NTP? Presently not on any list. IARC Monographs? OSHA Regulated?

Signs and Symptoms of Exposure Swallowing large amounts may cause digestive discomfort. Vapor over-exposure may irritate nose, throat and eyes seriously with moderate corneal injury and considerable redness lasting a week or more.

Medical Conditions

Generally Aggravated by Exposure: NONE KNOWN.

Emergency and First Aid Procedures

Flush eyes and skin with water for 15 minutes. Remove to fresh air.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Use absorbent sweeping compound to soak up material. Put into container. Dispose as hazardous waste.

Waste Disposal Method

Dispose as hazardous waste in accordance with EPA RCRA.

Precautions to be Taken in Handling and Storing

Keep away from heat, sparks, or open flame. Store at temperatures below 120°F.

Other Precautions When spraying more than one half can continuously or more than one can consecutively, use NIOSH approved respirator.

Section VIII - Control Measures

Respiratory Protection (Specify Type)

Self contained breathing apparatus if above TLV limit exceeding.

Ventilation	Local Exhaust	Yes	Special	None
	Mechanical (General)	None	Other	None

Protective Gloves

None required if spraying

Eye Protection

Wear eye protection

Other Protective Clothing or Equipment

Long sleeve and long pants

Work/Hygienic Practices: Do not smoke while using. Wash hands after use.



Material Safety Data Sheet

CHEVRON Supreme Motor Oil SAE 10W-30

CPS220019

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3746534
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
BULK LUBE OIL PICK-UP WE
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: October 22, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Changes have been made throughout this Material Safety Data Sheet. Read the entire document.

1. PRODUCT IDENTIFICATION

CHEVRON Supreme Motor Oil SAE 10W-30

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS220019
PRODUCT INFORMATION: (800)582-3835

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision.

SKIN IRRITATION:

This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain or a feeling of heat, discoloration, swelling, and blistering.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449
NDA - No Data Available NA - Not Applicable

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 401F (205C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

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Revision Date: 09/27/91

MSDS Number: 004449

NDA - No Data Available

NA - Not Applicable

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Amber liquid.

BOILING POINT: NDA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.90 @15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 10 cst @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

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NDA - No Data Available

NA - Not Applicable

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Supreme Motor Oil SAE 10W-30

CONTAINING

> 85.0 % DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
CAS64742547 5mg/3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

AND

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
CAS64742650

< 15.0 % ADDITIVES INCLUDING THE FOLLOWING

< 2.0 % ZINC ALKYL DITHIOPHOSPHATE
CAS68649423 A toxic chemical subject to the reporting requirements of
Section 313 of Title III of the Superfund Amendments and
Reauthorization Act of 1986 and 40 CFR Part 372.

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; YES
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

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NDA - No Data Available	NA - Not Applicable	

is found on lists: 14,15,17,
ZINC ALKYL DITHIOPHOSPHATE
is found on lists: 01,10,11,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably

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carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

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NDA - No Data Available NA - Not Applicable

Health Hazard Data

Statutory or Recommended Occupational Exposure Limits: No Threshold Limit Value (TLV) or Permissible Limit (PEL) exists for steel. Steel products in the natural state do not present an inhalation, ingestion or contact hazard. However, operations such as burning, welding, sawing, brazing, and grinding may result in the following effects if fumes exceed permissible limits as listed in Section 2 of the individual constituents.

Effects of Overexposure:

Inhalation: Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fever; or produce flu-like symptoms.

Chronic	Aluminum	- Physical irritation	Nickel	- Lung damage, skin sensitizer, some compounds may cause cancer. Listed NTPARC and IARC Monograph
	Bismuth	- Physical irritation		
	Boron	- Physical irritation	Phosphorous	- Lower jaw bone damage
	Cobalt	- Blood, heart, bone marrow, thyroid, lung and pancreatic damage	Sulfur	- Affects lung
			Selenium	- Nasal and lung irritation, stomach or bowel disturbance, garlic odor of breath
	Chromium	- Skin, nasal tissue damage, cancer, possible mutations	Tellurium	- Garlic breath and perspiration, metallic taste, dry mouth, nausea, reduced sweating, loss of appetite
	Copper	- Physical irritation		
	Iron	- Lung damage	Titanium	- Physical irritation
	Lead	- Metallic taste, weakness, constipation, nausea, nervous disorder, blood and urinary damage, reproductive and possible cancer hazard	Vanadium	- Lung damage
			Zinc	- Affects blood cells
	Manganese	- Lung damage, lack of coordination	* Coating oils	- Steel coated with an oil may result in a mild skin irritation upon prolonged and repeated contact. Wear gloves and/or wash skin following contact to prevent skin irritation.
	Molybdenum	- Affects liver, kidney, spleen, blood, causes diarrhea, bone deformation, and growth retardation		

Usual Route(s) of Entry: Inhalation

Emergency and First Aid Procedures:

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

SECTION 6 - Reactivity Data

Stability: Considered Stable

Incompatibility: Not incompatible with materials

Hazardous Polymerization: Not Applicable

Hazardous Decomposition Products: Not Applicable

Conditions to Avoid: May liberate metal fumes, metal oxides, or other oxides if exposed to elevated temperatures.

SECTION 7 - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable

Waste Disposal Method: This material may be reclaimed for reuse.

SECTION 8 - Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local-exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252, Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances.

SECTION 9 - Special Precautions

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: Not Applicable

SECTION 10 - Superfund Amendments and Reauthorization Act of 1986 (S.A.R.A.)

SARA Title III Section 313 and 40 CFR Part 372: The chemicals identified by (*) in Section 2 denote a toxic chemical or chemicals subject to reporting requirements of section 313 of Title III, and 40 CFR Part 372.

SECTION 11 - California Proposition 65

One or more of the alloys listed on this sheet contains a material known to the state of California to cause cancer or reproductive Toxicity. These are:

Material	Listed Effect
Nickel	Cancer
Lead	Reproductive Toxicity



Ryerson

a subsidiary of
Inland Steel Industries, Inc.

Material Safety Data Sheet STEEL



Emergency Telephone: 312-762-2121

SECTION 1 - Product Identification

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place
Chicago, Illinois 60608

Chemical Name and Synonyms: STEEL

Chemical Family: Metals

Formula: Not Applicable

SECTION 2 - Product Description and Hazardous Ingredients/Identity Information

See Chart Inside For Listing

SECTION 3 - Physical Data

Melting Point F (C): Greater Than 2800 (1540)

Vapor Pressure: Not Applicable

Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

Appearance and Odor: Grayish to silvery odorless sheet, strip, plate, bar, structural shapes, pipe and tubing.

Specific Gravity (H₂O = 1): Greater Than 7

% Volatile by Volume (%): Not Applicable

Evaporation Rate: Not Applicable

SECTION 4 - Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to surrounding area.

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to surrounding materials.

Flammable Limits: Not Applicable

Unusual Fire and Explosion Hazards: None

DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods; conditions; equipment used to store, handle or process the material; and hazards in connection with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910. 1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ryerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

* Steel products may be coated with petroleum oils to meet customer specifications. Information relative to specific coatings may be obtained from Ryerson.

PRODUCT DESCRIPTION	CAS NUMBER:	METAL 7439-99-6	ALLOYING ELEMENTS																METALLIC COATINGS		
			7439-96-5	7440-44-0	7429-90-5	7440-47-3	7440-50-9	7439-98-7	7440-02-0	7723-14-0	7440-21-3	7704-34-9	7440-42-8	7440-89-9	13494-80-9	7439-92-1	7440-62-2	7440-32-6	7440-66-6	7439-89-6	7429-90-5
AISI GRADE/TRADE NAME		Iron	*Manganese	Carbon	*Aluminum	*Chromium	*Copper	Molybdenum	*Nickel	Phosphorus	Silicon	Sulfur	Boron	Bismuth	Tellurium	*Lead	Vanadium	Titanium	*Zinc	Iron	*Aluminum
Nonresulfurized Carbon Steel	1005-1095	>95	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5									
Nonresulfurized Carbon Steel: Vanadium Bearing	1005-1095	>95	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	<0.5			
Nonresulfurized Carbon Steel: Lead Bearing	10L05-10L95	>95	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5									
Nonresulfurized Carbon Steel: Titanium Bearing	1006	>95	<1.0	<0.5	<0.1	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2				<0.5		<0.7			
Nonresulfurized Carbon Steel: Bismuth Bearing	1016	>95	<1.0	<1.0	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5									
Nonresulfurized Carbon Steel: Tellurium Bearing	1016	>95	<1.0	<1.0	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5		<0.5							
Nonresulfurized Carbon Steel: Bismuth Bearing	1045	>95	<1.2	<0.5	<0.1	<0.4		<0.5	<0.5	<0.5	<0.5	<0.5			<0.5						
Nonresulfurized Carbon Steel: Boron Treated	10B38	>95	<1.0	<0.5	<0.5	<0.4		<0.2	<0.1	<0.2	<0.3	<0.3		<0.3							
Nonresulfurized Carbon Steel: Boron Treated	10B42	>95	<1.0	<0.5	<0.5	<0.4		<0.5	<0.5	<0.5	<0.2	<0.5	<0.1	<0.1							
Resulfurized Carbon Steel	1106	>95	<1.0	<0.5	<0.5	<0.1		<0.2	<0.1	<0.1	<0.5	<0.2		<0.1							
Resulfurized Carbon Steel	1110-1151	>95	<1.7	<0.6	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2									
Resulfurized Carbon Steel: Bismuth Bearing	1110-1151	>95	<1.7	<0.6	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2									
Resulfurized Carbon Steel: Tellurium Bearing	1110-1151	>95	<1.7	<0.6	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2		<0.5							
Resulfurized Carbon Steel: Vanadium Bearing	1110-1151	>95	<1.7	<0.6	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2			<0.2						
Rephosphorized and Resulfurized Carbon Steel: Lead Bearing	11L10-11L51	>95	<1.7	<0.6	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2					<0.5				
Resulfurized Carbon Steel: Lead Bearing	11L10-11L51	>95	<1.7	<0.6	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2									
Resulfurized Carbon Steel: Lead and Tellurium Bearing	11L10-11L51	>95	<1.7	<0.6	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2									
Rephosphorized and Resulfurized Carbon Steel: Bismuth Bearing	1211-1215	>95	<1.2	<0.2	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2			<0.2						
Rephosphorized and Resulfurized Carbon Steel: Tellurium Bearing	1211-1215	>95	<1.2	<0.2	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2		<0.5							
Rephosphorized and Resulfurized Carbon Steel	1211-1215	>95	<1.2	<0.2	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2			<0.2						
Rephosphorized and Resulfurized Carbon Steel: Lead Bearing	12L11-12L15	>95	<1.2	<0.2	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.2				<0.5					
Nonresulfurized Carbon Steel	1513-1566	>95	<2.0	<1.0	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.1									
Nonresulfurized Carbon Steel: Vanadium Bearing	1513-1566	>95	<2.0	<1.0	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.1					<0.5	<0.1			
Nonresulfurized Carbon Steel: Vanadium, Titanium and Boron	15B13-15B36	>95	<2.0	<0.5	<0.2	<0.3	<0.6	<0.5	<0.3	<0.1	<0.5	<0.1	<0.1					<0.1			
Standard Alloy Steel: Manganese	1330-1345	>95	<2.0	<0.5	<0.5	<0.2		<0.5	<0.2	<0.3	<0.1	<0.5	<0.1								
Standard Alloy Steel: Molybdenum Bearing	4023-4047	>95	<1.0	<0.5	<0.5			<0.5	<0.3	<0.1	<0.5	<0.1									
Standard Alloy Steel: Molybdenum and Chromium	4118-4161	>95	<1.0	<0.7	<0.5	<1.1		<0.5	<0.5	<0.1	<0.3	<0.1									
Standard Alloy Steel: Tellurium Bearing	4118-4161	>95	<1.0	<0.7	<0.5	<1.1		<0.5	<0.5	<0.1	<0.3	<0.1			<0.2						
Standard Alloy Steel: Boron Treated	41B18-41B61	>95	<1.0	<0.7	<0.5	<1.1		<0.5	<0.5	<0.1	<0.3	<0.1	<0.1								
Standard Alloy Steel: Vanadium, Titanium and Boron	41B18-41B61	>95	<1.0	<0.7	<0.5	<1.1		<0.5	<0.5	<0.1	<0.3	<0.1	<0.1				<0.5	<0.5	<0.5		
Standard Alloy Steel: Molybdenum, Chromium and Lead	41L18-41L61	>95	<1.0	<0.7	<0.5	<1.1		<0.5	<0.5	<0.1	<0.3	<0.1									
Standard Alloy Steel: Molybdenum, Chromium and Nickel	4320-4340	>95	<1.0	<0.5	<0.5	<1.0		<0.5	<0.3	<0.1	<0.3	<0.1									
Standard Alloy Steel: Molybdenum and Nickel	4617-4626	>95	<0.7	<0.3	<0.5			<0.5	<0.3	<2.0	<0.1	<0.3	<0.1								
Standard Alloy Steel: Boron Treated	50B40-50B60	>95	<1.0	<0.7	<0.5	<1.0	<0.5			<0.1	<0.3	<0.1	<0.1								
Standard Alloy Steel: Chromium Bearing	5115-5180	>95	<1.0	<0.6	<0.5	<1.1				<0.1	<0.3	<0.1									
Standard Alloy Steel: Boron Treated	51B60	>95	<1.0	<0.7	<0.5	<1.0		<0.5		<0.1	<0.3	<0.1	<0.1								
Standard Alloy Steel: Chromium	50100	>95	<0.5	<1.2	<0.5	<0.7		<0.5	<0.2	<0.3	<0.1	<0.5	<0.1								
Standard Alloy Steel: Chromium	51100	>95	<0.5	<1.2	<0.5	<0.7		<0.5	<0.2	<0.3	<0.1	<0.5	<0.1								
Standard Alloy Steel: Chromium	52100	>95	<0.5	<1.2	<0.5	<0.7		<0.5	<0.2	<0.3	<0.1	<0.5	<0.1								
Standard Alloy Steel: Chromium & Vanadium	6118-6150	>95	<1.0	<0.6	<0.5	<1.2		<0.5	<0.2	<0.3	<0.1	<0.5	<0.1				<0.3				
Standard Alloy Steel: Molybdenum, Chromium and Nickel	8615-8622	>95	<1.0	<0.6	<0.5	<0.6		<0.5	<0.5	<0.7	<0.1	<0.3	<0.1								
Standard Alloy Steel: Molybdenum, Chromium Nickel and Lead	86L15-86L55	>95	<1.0	<0.6	<0.5	<0.6		<0.5	<0.5	<0.7	<0.1	<0.3	<0.1			<0.5					
Standard Alloy Steel: Nickel, Chrome & Molybdenum	9310	>92	<0.7	<0.2	<0.5	<1.5	<0.5	<0.2	<3.6	<0.1	<0.5	<0.1									
Standard Alloy Steel: Boron Treated	94B15-94B30	>93	<1.1	<0.4	<0.5	<0.6	<0.5	<0.2	<0.7	<0.1	<0.5	<0.1									
Inland ALUMA-TI	ALUMA-TI	>95	<0.7	<0.3	<0.1	<0.2		<0.2	<0.2	<0.2	<0.3	<0.2						<0.7			>98
ALUMINIZED STEEL	ALUMINIZED STEEL	>95	<1.2	<0.3	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5									>98
Inland CAL DI-FORM	CAL DI-FORM	>95	<1.0	<0.2	<0.1	<0.1		<0.2	<0.1	<0.2	<0.1	<0.3	<0.4				<0.2	<0.1			
Inland CAL HI-FORM	CAL HI-FORM	>97	<1.0	<0.2	<0.1	<0.1		<0.2	<0.1	<0.2	<0.1	<0.3	<0.4				<0.2	<0.1			
Inland CORTEN A	CORTEN A	>95	<0.7	<0.2	<0.1	<2.0	<1.0	<0.5	<0.7	<0.2	<1.0	<0.1					<0.2	<0.1			
Inland CORTEN B	CORTEN B	>95	<1.5	<0.2	<0.1	<1.0	<0.5	<0.1	<0.5	<0.2	<1.0	<0.1					<0.3	<0.1			
Inland CORTEN C	CORTEN C	>95	<1.5	<0.2	<0.1	<1.0	<0.5	<0.1	<0.5	<0.2	<1.0	<0.1					<1.0	<0.1			
Inland CORTEN W	CORTEN W	>95	<1.0	<0.4	<0.1	<1.0	<0.5	<0.1	<0.4	<0.2	<0.5	<0.2					<0.2	<0.1			
Inland DECOR	DECOR	>95	<2.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5									
Inland EZ CUT	EZ CUT	>95	<2.0	<0.3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.4				<0.5			>98		
Inland 4-WAY	4-WAY	>95	<1.0	<0.5	<0.5	<0.1	<0.2	<0.1	<0.2	<0.2	<0.5	<0.1									
Inland HI-FORM	HI-FORM	>95	<2.0	<0.2	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.3	<0.1					<0.2	<0.1			
Inland INAMEL	INAMEL	>95	<0.7	<0.5	<0.1	<0.2		<0.2	<0.3	<0.2	<0.1	<0.5	<0.1								
Inland INCUT	INCUT	>95	<2.0	<0.2	<0.2	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5		<0.5							
Inland INX	INX	>95	<2.0	<0.4	<0.1	<0.5		<0.3	<0.5	<0.5	<0.1	<0.4	<0.1				<0.2	<0.1			
Inland INX BISMUTH	INX BISMUTH	>95	<2.0	<0.4	<0.1	<0.5		<0.3	<0.5	<0.5	<0.1	<0.4	<0.1				<0.2	<0.1			
Inland INX LEDLOY	INX LEDLOY	>95	<2.0	<0.4	<0.1	<0.5		<0.3	<0.5	<0.5	<0.1	<0.4	<0.1			<0.4	<0.2	<0.1			
Inland LEDLOY	LEDLOY	>95	<2.0	<0.7	<0.2	<0.5		<0.5	<0.5	<0.5	<0.1	<0.5	<0.4			<0.5	<0.2	<0.1			
Inland LEDLOY A	LEDLOY A	>95	<1.2	<0.2	<0.5	<0.5		<0.5	<0.5	<0.5	<0.2	<0.5	<0.4			<0.5	<0.5	<0.4			
Inland LEDLOY AN	LEDLOY AN	>95	<1.2	<0.2	<0.5	<0.5		<0.5	<0.5	<0.5	<0.2	<0.5	<0.4			<0.5	<0.5	<0.4			
Inland LEDLOY AX	LEDLOY AX	>95	<1.7	<0.5	<0.5	<0.5		<0.5	<0.5	<0.2	<0.1	<0.5	<0.4			<0.5	<0.5	<0.4			
Inland MartInSite	MartInSite	>95	<0.7	<0.5	<0.1	<0.1															

Physical Hazard Data

Health or Recommended Occupational Exposure Limits: No Threshold Limit Value (TLV) or Permissible Exposure Limit (PEL) exists for stainless steel. Steel products in the natural state do not present an inhalation, ingestion or absorption hazard. However, operations such as burning, welding, sawing, brazing, and grinding may result in the following exposures exceed permissible limits as listed in Section 2 of the individual constituents.

Overexposure:

Steel or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fumes; or produce flu-like symptoms.

Aluminum	- Physical irritation	Molybdenum	- Affects liver, kidney, spleen, blood, causes diarrhea, bone deformation, and growth retardation
Bismuth	- Physical irritation	Nickel	- Lung damage, skin sensitizer, some compounds may cause cancer. Listed NTPARC and IARC Monograph
Boron	- Physical irritation	Phosphorous	- Lower jaw bone damage
Cobalt	- Blood, heart, bone marrow, thyroid, lung and pancreatic damage	Sulfur	- Affects lung
Chromium	- Skin, nasal tissue damage, cancer, possible mutations	Selenium	- Nasal and lung irritation, stomach or bowel disturbance, garlic odor of breath
Copper	- Physical irritation	Titanium	- Physical irritation
Iron	- Lung damage	Tungsten	- Over exposure to tungsten dust can result in hard metal disease whose symptoms are cough, wheezing, and shortness of breath.
Lead	- Metallic taste, weakness, constipation, nausea, nervous disorder, blood and urinary damage, reproductive and possible cancer hazard	Vanadium	- Lung damage
Manganese	- Lung damage, lack of coordination		

Usual Route(s) of Entry: Inhalation

Emergency and First Aid Procedures:

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

SECTION 6 - Reactivity Data

Stability: Considered Stable

Incompatibility: Not incompatible with materials

Hazardous Polymerization: Not Applicable

Hazardous Decomposition Products: Not Applicable

Conditions to Avoid: May liberate metal fumes, metal oxides, or other oxides if exposed to elevated temperatures. Acid pickling of product may result in the formation of hexavalent chromium which is a hazardous waste and suspect carcinogen.

SECTION 7 - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable

Waste Disposal Method: This material may be reclaimed for reuse.

SECTION 8 - Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252, Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances.

SECTION 9 - Special Precautions

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: Plasma arc cutting or welding can generate ozone. Overexposure can result in mucuous membrane irritation, as well as pulmonary changes including irritation, congestion and edema.

Section 10 - Superfund Amendments and Reauthorization Act of 1986 (S.A.R.A.)

SARA Title III Section 313 and 40 CFR Part 372: The chemicals identified by (*) in Section 2 denote a toxic chemical or chemicals subject to reporting requirements of section 313 of Title III, and 40 CFR Part 372.

Section 11 - California Proposition 65

One or more of the alloys listed on this sheet contains a material known to the state of California to cause cancer or reproductive Toxicity. These are:

Material	Listed Effect
Nickel	Cancer
Lead	Reproductive Toxicity



Material Safety Data Sheet STAINLESS



Emergency Telephone: 312-762-2121

SECTION 1 - Product Identification

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place
Chicago, Illinois 60608

Chemical Name and Synonyms: STAINLESS STEELS

Chemical Family: Metals

Formula: Not Applicable

SECTION 2 - Product Description and Hazardous Ingredients/Identity Information

See Chart Inside For Listing

SECTION 3 - Physical Data

Melting Point F (C): Greater Than 2550 (1400)

Vapor Pressure: Not Applicable

Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

Appearance and Odor: Grayish to silvery odorless sheet, strip, plate, bar, structural shapes, pipe and tubing.

Specific Gravity (H₂O = 1): Greater Than 7
% Volatile by Volume (%): Not Applicable
Evaporation Rate: Not Applicable

SECTION 4 - Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to surrounding area.

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to surrounding materials.

Flammable Limits: Not Applicable
Unusual Fire and Explosion Hazards: None

DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods; conditions; equipment used to store, handle or process the material; and hazards in connection with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910. 1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ryerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

GRADE	CAS NUMBER:	METAL	ALLOYING ELEMENTS																
		7439-89-6	7439-96-5	7440-44-0	7723-14-0	7704-34-8	7740-21-3	7740-47-3	7740-50-8	7723-14-0	7440-25-7	7440-63-1	7440-50-8	7440-62-2	7439-98-7	7727-37-9	7440-32-6	7440-33-7	
		Iron	*Manganese	Carbon	Phosphorous	Sulfur	Silicon	*Chromium	*Nickel	Selenium	Columbium	Tantalum	*Copper	Vanadium	Molybdenum	Nitrogen	Titanium	Tungsten	
203EZ		>65	<6.5	<0.1	<0.1	<0.4	<1.0	<18.0	<1.5							<0.1			
303		>67	>2.0	<0.2	<0.2	<0.1	<1.0	<19.0	<10.0										
304		>66	<2.0	<0.1	<0.1	<0.1	<1.0	<20.0	<10.5										
304L		>64	<2.0	<0.1	<0.1	<0.1	<1.0	<20.0	<12.0							<0.1			
309S		>57	<2.0	<0.1	<0.1	<0.1	<1.0	<24.0	<15.0										
310S		>48	<2.0	<0.1	<0.1	<0.1	<1.0	<26.0	<22.0										
316		>61	<2.0	<0.1	<0.1	<0.1	<1.0	<18.0	<14.0										
316L		>61	<2.0	<0.1	<0.1	<0.1	<1.0	<18.0	<14.0							<3.0	<0.1		
317L		>57	<2.0	<0.1	<0.1	<0.1	<1.0	<20.0	<15.0							<4.0			
321		>65	<2.0	<0.1	<0.1	<0.1	<1.0	<19.0	<12.0							<4.0			
330		>42	<2.0	<0.2	<0.1	<0.1	<1.5	<17.0	<37.0										
347		>41	<2.0	<0.1	<0.1	<0.1	<1.0	<19.0	<13.0										
410S		>74	<1.0	<0.1	<0.1	<0.1	<1.0	<13.5											
416		>81	<1.5	<0.1	<0.1	<1.0	<1.0	<14.0											
422		>79	<1.0	<0.3	<0.1	<0.1	<1.0	<14.0	<1.0					<0.5	<0.6			<1.3	
440C		>77	<1.0	<1.2	<0.1	<0.1	<1.0	<18.0							<1.3				
409		>84	<1.0	<0.1	<0.1	<0.1	<1.0	<11.8	<0.5						<0.8				
430		>79	<1.0	<0.2	<0.1	<0.1	<1.0	<18.0									<0.8		
TRADE NAMES																			
Nitronic 30		>68	<10.0	<0.2	<0.1	<0.1	<1.0	<18.0	<3.5				<1.5			<0.4			
Nitronic 50		>54	<6.0	<0.1	<0.1	<0.1	<1.0	<23.5	<13.5			<0.3		<0.3		<0.5			
Nitronic 60		>59	<9.0	<0.1	<0.1	<0.1	<4.5	<18.0	<9.0							<0.2			
PH 15-5		>70	<1.0	<0.1	<0.1	<0.1	<1.0	<15.5	<5.5			<0.5		<0.5		<0.5			
PH 17-4		>74	<1.0	<0.1	<0.1	<0.1	<1.0	<17.0	<5.0			<0.5		<0.5		<0.1			
PH 13-8-Mo		>75	<0.1	<0.1	<0.1	<0.1	<0.1	<13.3	<8.5							<2.5	<0.1	<1.4	
ALLOY 30		>30	<2.0	<0.1	<0.1	<0.1	<1.0	<21.5	<38.5		<1.0	<1.0	<4.5		<3.5				
2205			<2.0	<0.1	<0.1	<0.1	<1.0	<23.5	<7.0						<4.0	<0.2			
			*Aluminum	Carbon	*Chromium	Columbium	*Copper	Iron	*Manganese	Molybdenum	*Nickel	Phosphorus	Selenium	Silicon	Sulfur	Tantalum	Titanium	Tungsten	Vanadium
Contaminant and Exposure Limits (mg/m³)	As Welding Fume	Not Listed	As Metal 1 0.5 Chromium II and III cpds 0.5 0.5 Chromic Acid and Chromates 0.1c 0.05 as CrO₃ as Cr	Not Listed	As Copper Dust 1 1 As Copper Fume 0.1 0.2	As Total Particulate 10 - As Fe - 5	As Manganese Dust 5c 5c As Manganese Fume 1.3c 1.3c	As Soluble Mo Compounds 5 5 As Insoluble Mo Compounds 10 10	As Metal Ni 1 1 As Soluble Ni Compounds 0.1 0.1	As Phosphorus (yellow) 0.1 0.1	As Metal Se 0.2 0.2	10.5 resp. 10	As Sulfur Dioxide 5, 13c 5, 13c	Metal, Oxide 5 5	10.5 resp. 10	Metal, Soluble W Compounds 1,3c 1,3c Insoluble W Compounds 5, 10c 5, 10c	As Vanadium Pentoxide Dust 0.05 resp. PEL 0.05 resp. TLV As Vanadium Pentoxide Fume 0.05 0.05		
PEL TLV Values are time-weighted averages, except "c" indicates a ceiling or short-term exposure limit	5 5																		

Health Hazard Data

Statutory or Recommended Occupational Exposure Limits: No Threshold Limit Value (TLV) or Permissible Limit (PEL) exists for nickel alloys. See chart inside for listing of the individual constituents.

Overexposure:

Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fever; or produce flu-like symptoms.

Chronic	Aluminum	- Physical irritation	Molybdenum	- Affects liver, kidney, spleen, blood, causes diarrhea, bone deformation, and growth retardation
	Bismuth	- Physical irritation	Nickel	- Lung damage, skin sensitizer, some compounds may cause cancer. Listed NTPARC and IARC Monograph
	Boron	- Physical irritation		- Physical irritation
	Cobalt	- Blood, heart, bone marrow, thyroid, lung and pancreatic damage		- Steel coated with an oil may result in a mild skin irritation upon prolonged and repeated contact. Wear gloves and/or wash skin following contact to prevent skin irritation.
	Chromium	- Skin, nasal tissue damage, cancer, possible mutations	Titanium	- Physical irritation
	Copper	- Physical irritation	* Coating oils	- Over exposure to tungsten dust can result in hard metal disease whose symptoms are cough, wheezing, and shortness of breath.
	Iron	- Lung damage	Tungsten	
	Lead	- Metallic taste, weakness, constipation, nausea, nervous disorder, blood and urinary damage, reproductive and possible cancer hazard		
	Manganese	- Lung damage, lack of coordination		

Usual Route(s) of Entry: Inhalation

Emergency and First Aid Procedures:

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

SECTION 6 - Reactivity Data

Stability: Considered Stable

Incompatibility: Not incompatible with materials

Hazardous Polymerization: Not Applicable

Hazardous Decomposition Products: Not Applicable

Conditions to Avoid: May liberate metal fumes, metal oxides, or other oxides if exposed to elevated temperatures.

SECTION 7 - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable

Waste Disposal Method: This material may be reclaimed for reuse.

SECTION 8 - Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252, Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances.

SECTION 9 - Special Precautions

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: Not Applicable

SECTION 10 - Superfund Amendments and Reauthorization Act of 1986 (S.A.R.A.)

SARA Title III Section 313 and 40 CFR Part 372: The chemicals identified by (*) in Section 2 denote a toxic chemical or chemicals subject to reporting requirements of section 313 of Title III, and 40 CFR Part 372.

SECTION 11 - California Proposition 65

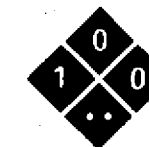
One or more of the alloys listed on this sheet contains a material known to the state of California to cause cancer or reproductive Toxicity. These are:

Material	Listed Effect
Nickel	Cancer
Lead	Reproductive Toxicity



Material Safety Data Sheet

NICKEL



SECTION 1 - Product Identification

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place
Chicago, Illinois 60608

Chemical Name and Synonyms: NICKEL ALLOYS

Chemical Family: Metals

Formula: Not Applicable

Emergency Telephone: 312-762-2121

SECTION 2 - Product Description and Hazardous Ingredients/Identity Information

See Chart Inside For Listing

SECTION 3 - Physical Data

Melting Point F (C): Greater Than 2300 (1260)

Vapor Pressure: Not Applicable

Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

Appearance and Odor: Grayish to silvery odorless sheet, strip, plate, bar, structural shapes, pipe and tubing.

Specific Gravity (H₂O = 1): Greater Than 7

% Volatile by Volume (%): Not Applicable

Evaporation Rate: Not Applicable

SECTION 4 - Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to surrounding area.

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to surrounding materials.

Flammable Limits: Not Applicable

Unusual Fire and Explosion Hazards: None

DISCLAIMER

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The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods; conditions; equipment used to store, handle or process the material; and hazards in connection with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910. 1200 *et seq.* This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ryerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

* Steel products may be coated with petroleum oils to meet customer specifications. Information relative to specific coatings may be obtained from Ryerson.

Grade	CAS NUMBER:	7440-02-0	7440-48-4	7440-47-3	7439-98-7	HAZARDOUS CONSTITUENTS - NOMINAL PERCENT					7449-90-5	7440-32-5	7440-50-8	7727-37-9	7440-42-8	Others
		*Nickel	*Cobalt	*Chromium	Molybdenum	Tungsten	Iron	Silicon	*Manganese	Carbon	*Aluminum	Titanium	*Copper	Nitrogen	Boron	
200		99.2					0.40	0.15	0.35	0.10		0.10	0.25			
201		99.0					0.40	0.15	0.35	0.02		0.10	0.25			
400		66.5	1.0				1.5	0.50	1.25	0.15	0.50		31.0			
404		54.5					0.50	0.10	0.10	0.15	0.50		45.0			
R405		66.5	1.0				2.5	0.50		0.25	0.50		31.0			
K500		63.0	1.0				2.0	0.50	1.5	0.20	2.70	0.60	29.0			
600		72.0	1.0	15.5			8.0	0.50	1.0	0.08	0.35	0.30	0.50			
800		32.5	2.0	21.0			44.0	1.00	1.5	0.10	0.38	0.38	0.75			
800H/800HT		32.5	2.0	21.0			44.0	1.00	1.5	0.08	0.38	0.38	0.75			
825		42.0	2.0	21.5	3.0		0.50	1.0	0.50	0.20	1.0	2.20				
C276		57.0	2.5	15.5	16.0	4.0	0.5	0.08	1.0	0.01						V-0.35
625		62.0	1.0	21.5	9.0		5.0	0.50	0.50	0.10	0.40	0.40				Cb + Ta-3.7
718		52.5	1.0	18.0	3.0		19.0	0.35	0.35	0.05	0.50	0.90	0.10		0.004	Cb + Ta-5.0
X-750		70.0	1.0	15.5			7.0	0.35	0.35	0.08	0.80	2.5	0.50			Cb + Ta-1.0

Contaminant and Exposure Limits (mg/m³)	*Aluminum	Boron	Carbon	*Cobalt	*Chromium	Columbium	*Copper	Iron	*Manganese	Molybdenum	*Nickel	Nitrogen	Silicon	Tantalum	Titanium	Tungsten	Vanadium
As Welding Fume	As Metal 1 0.5	As Boron Oxide 10,5 resp. 10	Not Listed	As Dust and Fume 0.1 0.1	Chromium II and III cpds 0.5 0.5	Not Listed	As Copper Dust 1 1	As Total Particulate 10 -	As Manganese Dust 5c 5c	As Soluble Mo Compounds 5 5	As Metal Ni 1 1	Not Listed	10,5 resp. 10	Metal, Oxide 5 5	10,5 resp. 10	Metal, Soluble W Compounds 1,3c 1,3c	As Vanadium Pentoxide Dust 0.05 resp. 0.05
PEL TLV Values are time-weighted averages, except "c" indicates a ceiling or short-term exposure limit	5 5				Chromic Acid and Chromates 0.1c 0.05 as CrO ₃ as Cr		As Copper Fume 0.1 0.2	As Fe - 5	As Manganese Fume 1,3c 1,3c	As Insoluble Mo Compounds 10 10	As Soluble Ni Compounds 0.1 0.1					Insoluble W Compounds 5, 10c 5, 10c	As Vanadium Pentoxide Fume 0.05 0.05

SECTION 5 – Health Hazard Data

Applicable Statutory or Recommended Occupational Exposure Limits: No Threshold Limit Value (TLV) or Permissible Exposure Limit (PEL) exists for aluminum alloys. See chart inside for listing of the individual constituents.

Effects of Overexposure:

Acute – Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fume fever; or produce flu-like symptoms.

Chronic	Aluminum	– Physical irritation
	Bismuth	– Physical irritation
	Boron	– Physical irritation
	Cobalt	– Blood, heart, bone marrow, thyroid, lung and pancreatic damage
	Chromium	– Skin, nasal tissue damage, cancer, possible mutations
	Copper	– Physical irritation
	Iron	– Lung damage
	Lead	– Metallic taste, weakness, constipation, nausea, nervous disorder, blood and urinary damage, reproductive and possible cancer hazard
	Manganese	– Lung damage, lack of coordination
	Titanium	– Physical irritation
	Vanadium	– Lung damage
	Zinc	– Affects blood cells

Emergency and First Aid Procedures:

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

SECTION 6 – Reactivity Data

Stable under normal conditions of use, storage and transportation.

For finely divided aluminum (e.g., small chips, fines):

With water: Generates hydrogen and heat slowly. Water/aluminum mixtures may be hazardous when confined.

With heat: Oxidizes at a temperature-dependent rate.

With strong oxidizers: Violent reaction with much heat generation.

With acids & alkalis: Reacts to generate hydrogen.

With halogenated compounds: Halogenated hydrocarbons can react violently with finely divided aluminum.

SECTION 7 – Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable

Waste Disposal Method: This material may be reclaimed for reuse.

SECTION 8 – Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252, Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances.

SECTION 9 – Special Precautions

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: Plasma arc cutting or welding can generate ozone. Overexposure can result in mucous, membrane irritation as well as pulmonary changes including irritation, congestion and edema.

Section 10 – Superfund Amendments and Reauthorization Act of 1986 (S.A.R.A.)

SARA Title III Section 313 and 40 CFR Part 372: The chemicals identified by (*) in Section 2 denote a toxic chemical or chemicals subject to reporting requirements of section 313 of Title III, and 40 CFR Part 372.

Section 11 – California Proposition 65

One or more of the alloys listed on this sheet contains a material known to the state of California to cause cancer or reproductive Toxicity. These are:

Material	Listed Effect
Nickel	Cancer
Lead	Reproductive Toxicity

Date Prepared:
November 18, 1991

Issued By: Joseph T. Ryerson & Son Inc.



Material Safety Data Sheet

ALUMINUM



SECTION 1 – Product Identification

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place
Chicago, Illinois 60608

Chemical Name and Synonyms: ALUMINUM ALLOY

Chemical Family: Metals

Formula: Not Applicable

Emergency Telephone: 312-762-2121

SECTION 2 – Product Description and Hazardous Ingredients/Identity Information

See Chart Inside For Listing

SECTION 3 – Physical Data

Melting Point F (C): Wide Range – 900-1200 (482-649)

Vapor Pressure: Not Applicable

Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

Appearance and Odor: Grayish to silvery odorless sheet, strip, plate, bar, structural shapes, pipe and tubing and extrusions.

Specific Gravity (H₂O = 1): Greater Than 3

% Volatile by Volume (%): Not Applicable

Evaporation Rate: Not Applicable

SECTION 4 – Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to surrounding area.

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to surrounding materials. Small chips, fine turnings, and dust may ignite readily. Use coarse water spray on chips, turnings, etc. Use class D extinguishing agents or dry sand on fines. Do not use halogenated extinguishing agents on small chips or fines. Dust clouds may be explosive. Molten aluminum may explode on contact with water.

Flammable Limits: Not Applicable

Unusual Fire and Explosion Hazards: None

DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods; conditions; equipment used to store, handle or process the material; and hazards in connection with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910. 1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ryerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

Grade	CAS NUMBER:	7429-90-5	7440-21-3	1309-37-1	7440-50-8	ALLOYING ELEMENTS		7440-47-3	1314-13-2	7440-32-6	7440-48-4	7439-92-1	7440-69-9	7440-62-2
		*Aluminum	Silicon	Iron	*Copper	*Manganese	Magnesium	*Chromium	*Zinc	Titanium	*Cobalt	*Lead	Bismuth	Vanadium
1100		>99.0	<1.0	<1.0	<0.3	<0.1			<0.1					
2011		>91.0	<0.4	<0.7	<6.0				<0.3			<0.6	<0.6	
2017			<0.8	<0.7	<4.5	<1.0	<0.8	<0.1	<0.3	<0.2				
2024			<0.5	<0.5	<4.9	<0.9	<1.8	<0.1	<0.3	<0.2				
3003			<0.6	<0.7	<0.2	<1.5			<0.1					
3105			<0.6	<0.7	<0.3	<0.8	<0.8	<0.2	<0.4	<0.1				
5005			<0.3	<0.7	<0.2	<0.2	<1.1	<0.1	<0.3					
5052			<0.3	<0.4	<0.1	<0.1	<2.8	<0.4	<0.1					
5083			<0.4	<0.4	<0.1	<1.0	<4.9	<0.3	<0.3	<0.2				
5086			<0.4	<0.5	<0.1	<0.7	<4.5	<0.3	<0.3	<0.2				
5454			<0.3	<0.4	<0.1	<1.0		<0.2	<0.3	<0.2				
5456			<0.3	<0.4	<0.1	<1.0	<5.5	<0.2	<0.3	<0.2				
6061			<0.8	<0.7	<0.4	<0.2	<1.2	<0.4	<0.3	<0.2				
6063			<0.8	<0.4	<0.1	<0.1	<0.9	<0.1	<0.1	<0.1				
6262		>94.0	<0.8	<0.7	<0.4	<0.2	<1.2	<0.2	<0.3	<0.2		<0.7	<0.7	
7075			<0.4	<0.5	<2.0	<0.3	<2.9	<0.3	<6.1	<0.2				

	*Aluminum	Bismuth	*Chromium	*Cobalt	*Copper	Iron	*Lead	*Manganese	Magnesium	Ozone	Silicon	Titanium	Vanadium	*Zinc
Contaminant and Exposure Limits (mg/m ³)	As Welding Fume	Not Listed	As Metal 1 0.5 Chromium II and III cpds 0.5 0.5 Chromic Acid and Chromates 0.1c 0.05 as Cr ₂ as Cr	As Dust and Fume 0.1 0.1	As Copper Dust 1 1 As Copper Fume 0.1 0.2	As Total Particulate 10 - As Fe - 5	As Inorganic Pb Dust and Fume 0.05 0.15	As Manganese Dust 5c 5c As Manganese Fume 1,3c 1,3c	As Magnesium Oxide Fume 10,5 resp. 10	As Gas (ppm) 0.1 0.1	10,5 resp. 10	10,5 resp. 10	As Vanadium Pentoxide Dust 0.05 resp. 0.05 resp. As Vanadium Pentoxide Fume 0.05 0.05	As Zinc Oxide Dust 10,5 resp. 10 As Zinc Oxide Fume 5, 10c 5, 10c
PEL TLV Values are time-weighted averages, except *c* indicates a ceiling or short-term exposure limit	5 5													

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061

Manufacturer:
SANI-FRESH INTERNATIONAL, INC.
4702 Goldfield Drive
San Antonio, Texas 78213
Emergency Tel. No. 512/561-5374

MATERIAL SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF PRODUCT*

Product Name: HEAVY-DUTY SANI-FRESH
CLEANSER
Product Code: #91214

Date Issued: 11/21/91
Supercedes: 06/27/89
National Item#: 1127XX

SECTION 2: HAZARDOUS INGREDIENTS CAS # OSHA PEL ACGIH TLV EXPOSURE LIMITS %

SODIUM LAURETH SULFATE	9004-82-4	NE	NE	NE	15-25
SODIUM C14-16 OLEFIN SULFONATE	68439-57-6	NE	NE	NE	1-5
SODIUM CHLORIDE	7647-14-5	NE	NE	NE	< 5
MIPA-DODECYLBENZENSULFONATE	42504-46-1	NE	NE	NE	< 5

Non-Hazardous Ingredients*

*UNIDENTIFIED INGREDIENTS ARE NOT CONSIDERED HAZARDOUS UNDER THE FEDERAL HAZARD COMMUNICATION STANDARD (29 CFR-1910.1200).

SECTION 3: PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point (F): < 212F	Specific Gravity (H ₂ O=1): 1.015 TO 1.025
Vapor Pressure (mm Hg): < 18	PH 5.0 to 6.0
Vapor Density (Air=1): < 1	Reactivity In Water: NONE
Solubility in Water: COMPLETE	Melting Point: N.E.
Evaporation Rate (BuAc=1): < 1	% Volume (%) (Minus Water): < 2
By Volume (%) (Minus Water): < 20	
Appearance and Odor: RED CLEAR GEL	

Section 4: FIRE AND EXPLOSION DATA

Flash Point: N/A
Method Used: N/A
Flammable Limits in Air % By Volume: LEL= N/A UEL=N/A
Auto-Ignition Temperature: N/A
Extinguishing Media: USE MEDIA SUITABLE FOR SURROUNDING MATERIALS
Special Fire Fighting Procedures: NO SPECIAL PROCEDURES REQUIRED
Unusual Fire & Explosion Hazards: NONE KNOWN

SECTION 5: REACTIVITY DATA

Stability: NORMALLY STABLE Conditions to Avoid: NONE UNDER NORMAL
USE CONDITIONS.
Incapability - Materials to Avoid: STRONG OXIDIZERS

Hazardous Polymerization: DOES NOT OCCUR

Hazardous Decomposition Products: CARBON MONOXIDE, CARBON DIOXIDE

SECTION 6: SPECIAL PRECAUTIONS AND SPILL, LEAK PROCEDURES

Precautions To Be Taken In Handling And Storage:

RECOMMEND STORAGE BETWEEN 40 F (5 C) AND 100 F (37 C).

Steps To Be Taken In Case Material is Released Or Spilled:

CLEAN UP WITH ABSORBENT MATERIAL

Waste Disposal Methods: (Consult Federal, State and Local Regulations):
FLUSH WASTE TO SEWER WITH LARGE AMOUNTS OF WATER, IF PERMITTED BY LOCAL,
STATE AND FEDERAL REGULATIONS. THIS PRODUCT IS NOT A HAZARDOUS WASTE
UNDER CURRENT RCRA REGULATIONS.

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061

Manufacturer:
SANI-FRESH INTERNATIONAL, INC.
4702 Goldfield Drive
San Antonio, TX 78218
Emergency Tel. No. 512/661-5374

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: WATERLESS SANI-FRESH CLEANSER

Date Issued: 06/21/91

Product Code: 91215

Supersedes: 05/17/89

National Item#: 1128XX

SECTION 2. INGREDIENTS

	OSHA PEL	ACGIH TLV	EXPOSURE LIMITS	%	CAS #
D-LIMONENE (DIPENTENE)	NE	NE	NE	5-25	138-86-3
MINERAL OIL (AS MIST)	5mg/m ³	5mg/m ³	NE	5-15	8042-47-5
TRIETHANOLAMINE	NE	NE	NE	< 5	102-71-6
C11-C12 ISOPARAFFIN	NE	NE	300ppm	5-25	64742-48-9
OLEIC ACID	NE	NE	NE	< 5	112-80-1
POLYETHYLENE*	NE	NE	NE	0-5	9002-88-4

UNIDENTIFIED INGREDIENTS ARE NOT CONSIDERED HAZARDOUS UNDER THE FEDERAL HAZARD COMMUNICATION STANDARD (29 CFR-1910.1200).

* WATERLESS WITH GRIT CONTAINS POLYETHYLENE AND WATERLESS DOES NOT CONTAIN POLYETHYLENE.

SECTION 3. PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point (F): NE Specific Gravity (H₂O=1): 0.882
Vapor Pressure (mm Hg.): NE PH: 7.5 to 8.5
Vapor Density (Air=1): NE Reactivity in Water: NONE
Solubility in Water: APPRECIABLE Melting Point: N/A
Appearance and Odor: WHITE CREAMY LOTION WITH CITRUS ODOR.

Section 4. FIRE AND EXPLOSION DATA

Flash Point: 145F Method Used: PENSKE-MARTENS CLOSED CUP ASTM D-93
Flammable Limits In Air % By Volume: LEL=NE UEL=NE
Auto-Ignition Temperature: NE
Extinguishing Media: FOAM, DRY CHEMICAL OR CARBON DIOXIDE.
Special Fire Fighting Procedures: USE SUPPLIED-AIR BREATHING EQUIPMENT
FOR ENCLOSED OR CONFINED SPACES OR AS OTHERWISE NEEDED.
Unusual Fire & Explosion Hazards: NONE KNOWN TO SANI-FRESH

SECTION 5. PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: STABLE Conditions to Avoid: NORMALLY STABLE. AVOID HEAT, OPEN FLAMES.
Incompatibility - Materials to Avoid: STRONG OXIDIZERS (SUCH AS LIQUID CHLORINE AND SODIUM HYPOCHLORITE).
Hazardous Polymerization: WILL NOT OCCUR
Hazardous Decomposition Products: FUMES, SMOKE CARBON MONOXIDE AND OTHER DECOMPOSITION PRODUCTS IN CASE OF INCOMPLETE COMBUSTION

SECTION 6. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions To Be Taken In Handling And Storage:
RECOMMEND STORAGE BETWEEN 40F AND 100F
Other Precautions: NONE
Steps To Be Taken In Case Material Is Released Or Spilled:
REMOVE HEAT AND IGNITION SOURCES; VENTILATE THE AREA; CLEAN UP WITH ABSORBENT.
Waste Disposal Methods (Consult Federal, State & Local Regulations):
FLUSH WASTE TO SEWER WITH LARGE AMOUNTS OF WATER, IF PERMITTED BY LOCAL, STATE AND FEDERAL REGULATIONS.
Note: THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS OF REPORTABLE QUANTITIES ON THE CURRENT COMMUNITY RIGHT-TO-KNOW SECTION 313, TITLE III LIST.

MATERIAL SAFETY DATA SHEET

PAGE 2

Product Name: WATERLESS SANI-FRESH CLEANSER
Date Issued: 06/21/91

SECTION 7. HEALTH HAZARDS

Acute: EYE IRRITATION, UPSET STOMACH

Chronic: NE

Signs & Symptoms of Exposure: REDNESS AND ITCHING OF EYES

Medical Conditions Generally Aggravated By Exposure: NE

Chemical Listed as Carcinogen or Potential Carcinogen:

National Toxicology Program: NO

I.A.R.C. Monographs: NO

OSHA: NO

Emergency First Aid:

Eyes: IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE HOULDING THE EYE LIDS OPEN. GET PROMPT MEDICAL ATTENTION.

Ingestion: CONTACT LOCAL POISON CONTROL CENTER OR PHYSICIAN IMMEDIATELY.

Routes Of Entry:

Inhalation: HIGHLY UNUSUAL

Eyes: MAY OCCUR

Skin: MAY OCCUR BUT UNLIKELY

Ingestion: MAY OCCUR

SECTION 8. SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection: NOT NORMALLY REQUIRED

Ventilation: NOT GENERALLY NEEDED

Local Exhaust: ADEQUATE

Mechanical: ADEQUATE

Special: N/A

Other: N/A

Protective Gloves: NOT NORMALLY NEEDED

Eye Protection: IF POTENTIAL FOR EYE CONTACT EXISTS, WEAR CHEMICAL GOGGLES.

Other Protective- Clothing or Equipment: NONE NORMALLY REQUIRED.

Work/Hygienic Practices: CLEAN-UP ALL SPILLS IMMEDIATELY. PRACTICE GOOD PERSONAL HYGIENE

Hazardous Materials Identification System Rating (HMIS)

HEALTH -1 FIRE -2 REACTIVITY -0

PERSONAL PROTECTION -A (SAFETY GLASSES)

NOTES: THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT SHOULD BE MADE BY THE MATERIAL USER BASED ON THE PARTICULAR PLANT CONDITIONS WHERE THE MATERIAL IS TO BE USED TOGETHER WITH INFORMATION CONTAINED IN THE PRODUCT M.S.D.S.

THIS MATERIAL SAFETY DATA SHEET PERTAINS TO ALL SANI-FRESH AND SANI-TUFF WATERLESS AND WATERLESS WITH GRIT CLEANSERS.

NE MEANS NOT ESTABLISHED

N/A MEANS NOT AVAILABLE

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

INTERNATIONAL HAZARD MATERIAL SAFETY DATA SHEET

Page 1-of-2

I-Hazard Material No.: (04020601)

Section I -- Material Identification

Manufacturer: Viscosity Oil

Address:

3200 S. Western Avenue

Chicago, IL 60608

Emergency Telephone No.: (312) 847-0224 (Ext.)

Trade Name: 1400117H91 EP Friction Modifier

Trade Name Synonyms: NA

Chemical Name & Synonyms: NA

Chemical Family: Organo-Phosphorus Compound

Formula: NA

Section II -- Ingredients

Ingredients	(Percent)	PEL	TLV	INTP
Organo-Phosphorus Compd. (Non-Hazardous)	> 90	NA	NA	---
Phenol	< 3	NA	5ppm / TWA	---
No ingredient is a known carcinogen as defined by 29CFR 1910.1200				

Section III -- Physical Data

Boiling Point(F): Not determined
 Vapor Pressure(mm Hg 20C)(F): <0.1mm Hg
 Density(AIR=1): 25
 Flash Point(F): Not determined
 Physical State: Liquid (semi-solid below RT)
 Solubility in Water: Insol.
 Appearance & Odor: Light colored liquid with sweet odor

Specific Gravity(H2O=1): 0.91

Z Volatile by Volume: RT

Evaporation Rate: 0.01

pH: NA

Section IV -- Health Hazard Data

Major Exposure: Inhalation-[] Skin Contact-[X] Skin Absorption-[]
 Hazard/Primary: Eye Contact-[] Ingestion-[]
 Route of Entry:

Known Acute and Chronic Health Effects of Exposure, Including Signs & Symptoms

Not expected to cause skin and eye irritation (based on actual test data). Oral toxicity greater than 5000 mg/Kg in rats. Medical conditions aggravated: not determined

Section V -- Fire and Explosion Data

Flash Point(F) [Method Used]: 250°C [PMCC] Flammable Limits: LEL: NO /
 UEL: NO /

Extinguishing Media: Dry chemical, foam, CO₂

Extinguishing Proc: NEPA 2.1.0

Explosion Hazards: None known

Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON RPM Universal Gear Lubricant SAE 80W-90

CPS225040

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: November 26, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON RPM Universal Gear Lubricant SAE 80W-90

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER
OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS225040
PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004552
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

X-DOS051 (06-89)

Appendix33-000984

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 0

Revision Date: 12/19/90

MSDS Number: 004552

NDA - No Data Available

NA - Not Applicable

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 392F (200C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 0

Revision Date: 12/19/90

MSDS Number: 004552

NDA - No Data Available

NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark green liquid.

BOILING POINT: NDA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.90 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 14 cSt @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 0	Revision Date: 12/19/90	MSDS Number: 004552
NDA - No Data Available	NA - Not Applicable	

100.0 % CHEVRON RPM Universal Gear Lubricant SAE 80W-90

CONTAINING

> 90.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 10.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

Revision Number: 0	Revision Date: 12/19/90	MSDS Number: 004552
NDA - No Data Available	NA - Not Applicable	

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0**Revision Date: 12/19/90****MSDS Number: 004552****NDA - No Data Available****NA - Not Applicable**



CLEAN ACROSS AMERICA AND
THROUGHOUT THE WORLD™

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301

ASHGROVE CEMENT
WEST INC
13939 N RIVERGATE
BLVD
PORTLAND, OR 97203

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

01/08/92

ISSUE DATE: 12/09/91

SUPERSEDES: 04/23/90

ZEP OLD SMOKY

PRODUCT NUMBER: 0071

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(404) 435-2973

NON-OFFICE HOURS, WEEKENDS

(404) 351-2952

AND HOLIDAYS, PLEASE CALL YOUR

(404) 432-2873

LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(404) 922-0923

CHEMTREC:

1-800-424-9300

TOLL-FREE - ALL CALLS RECORDED

DISTRICT OF COLUMBIA:

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

* ISOPROPYL ALCOHOL * ipa; dimethylcarbinol; 2-propanol; CAS# 67-63-0; RTECS# NT8050000; OSHA PEL-400 PPM; OSHA/ACGIH STEL-500 PPM

TLV
(PPM)
400

EFFECTS
(SEE REVERSE)
IRR FBL

% IN
PROD.
10-20

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

EYE IRRITANT. EYE CONTACT MAY PRODUCE STINGING, BURNING, INFLAMMATION, AND IN EXTREME CASES MAY PRODUCE CORNEAL DAMAGE. EXPOSURE MAY BE IRRITATING TO SKIN, AND UPPER RESPIRATORY TRACT. ACCUMULATION OF HARMFUL QUANTITIES OF VAPOR IS PRECEDED BY SEVERE IRRITATION WHICH MAKES OVER-EXPOSURE UNLIKELY. OVER-EXPOSURE CAN RESULT IN MILD NARCOTIC EFFECTS, INCLUDING FLUSHING, HEADACHE, DIZZINESS, AND NAUSEA. EXISTING SKIN, EYE OR RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE.

Chronic Effects of Overexposure:

REPEATED OR PROLONGED, SKIN CONTACT MAY PRODUCE SOME DRYNESS OF SKIN. CHRONIC EFFECTS FROM ALCOHOL VAPORS ARE RARE AND WOULD RESULT FROM SEVERE, PROLONGED, AND REPEATED CONTACT, WHICH IS USUALLY PRECLUDED BY IRRITATION. IN MOST EXTREME CASES, NARCOSIS, UNCONSCIOUSNESS, AND DEATH COULD RESULT. NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

Est'd PEL/TLV: NOT ESTABLISHED

Primary Routes of Entry: INH.

HMIS Codes: HEALTH 1;FLAM. 1;REACT. 0;PERS. PROTECT. B ;CHRONIC HAZ. NO

FIRST AID PROCEDURES:

Skin: IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

Eyes: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

Inhale: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION PROMPTLY.

Ingest: THIS ROUTE OF EXPOSURE IS NOT LIKELY DUE TO PRODUCT NATURE.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing: THE USE OF NEOPRENE, NITRILE OR NATURAL RUBBER GLOVES IS STRONGLY RECOMMENDED, ESPECIALLY FOR PROLONGED CONTACT.

Eye Protection: USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRONGLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT LENSES.

Respiratory Protection: AVOID INHALATION OF SPRAY MISTS, AND DO NOT DIRECT SPRAY TOWARD PEOPLE.

Ventilation: VENTILATION SHOULD BE EQUAL TO OUTDOORS. USE EXHAUST FANS AND/OR EXHAUST HOOD IN ENCLOSED SPACES.

SECTION V - PHYSICAL DATA

Boiling Point (°F): APPROX. 205F

Specific Gravity: 0.95

Vapor Pressure (mmHg): N/A

Percent Volatile by Volume (%): 99

Vapor Density (air = 1): N/A

Evaporation Rate (WATER = 1): 1.0

Solubility in Water: COMPLETE

pH (concentrate): 9.7

pH (use dilution of N/A): N/A

Appearance and Odor: A CLOUDY, THIN, COLORLESS LIQUID WITH A PLEASANT FRAGRANCE

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used): NOT FLAMMABLE (CSMA)

Flammable Limits: LEL N/A UEL N/A

Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL AND FOAM.

Special Fire Fighting: WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS.

Unusual Fire Hazards: DIRECT WATER ONTO INTACT CONTAINERS TO PREVENT BURSTING.

00101007

SECTION VII - REACTIVITY DATA

Stability: STABLE
Incompatibility (avoid): HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS
Polymerization: WILL NOT OCCUR.
Hazardous Decomposition: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING SPILL CLEAN-UP. LARGE SPILLS ARE UNLIKELY DUE TO PACKAGING. SPILL MAY BE ABSORBED ON AN INERT ABSORBENT (eg ZEP-O-ZORB), PLACED IN A SUITABLE CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

Waste Disposal Method:

PRODUCT IS CONSUMED IN USE. DO NOT CRUSH, PUNCTURE OR INCINERATE SPENT CONTAINERS. LARGE NUMBERS OF AEROSOL CONTAINERS MAY REQUIRE HANDLING AS A HAZARDOUS WASTE, BUT IN MOST STATES TOTAL HAZARDOUS WASTE QUANTITIES LESS THAN 220 LBS PER MONTH MAY ALLOW DISPOSAL IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE AND FEDERAL AGENCIES FOR THE PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

DO NOT STORE AT TEMPERATURES ABOVE 120°F. OR IN DIRECT SUNLIGHT. DO NOT PUNCTURE OR INCINERATE CONTAINER. DO NOT BREATHE SPRAY MISTS OR VAPORS. KEEP PRODUCT OUT OF EYES. KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT Proper Shipping Name: CONSUMER COMMODITY

DOT Hazard Class: N/A

DOT I.D. Number: N/A

DOT Label/Placard: ORM-D

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container): : NONE

NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS USED IN THE MSDS:
BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.

CAS #: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).

DESIGNATIONS: Chemical and common names of hazardous ingredients.

EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLVs, and OSHA PEL's (TWA, STEL and ceiling limits).

ACGIH: American Conference of Governmental Industrial Hygienists.

CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit - A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure limits.

(S) SKIN: Skin contact with substance can contribute to overall exposure.

STEL: Short Term Exposure Limit - Maximum concentration

for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBUL: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX: Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this product.

N/D: Not Determined - Insufficient information for a determination for this item.

RTECS #: Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.

SARA: Superfund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated exposure.

TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.

ESTD PEL/TLV: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of vapors.

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: It refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)

PERCENT VOLATILE: The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure.

SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition or fire.

INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing excess pressure and heat.

STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act

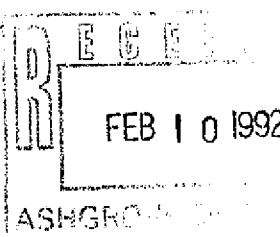
RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.

TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)





Material Safety Data Sheet

CHEVRON 2-Cycle Oil

CPS226486

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: December 12, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Changes have been made throughout this Material Safety Data Sheet. Read the entire document.

1. PRODUCT IDENTIFICATION

CHEVRON 2-Cycle Oil

CAUTION! - MAY CAUSE EYE AND SKIN IRRITATION
- COMBUSTIBLE
- KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS226486
PRODUCT INFORMATION: (800)582-3835

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision.

SKIN IRRITATION:

This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain or a feeling of heat, discoloration, swelling, and blistering.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

Prolonged breathing of vapors can cause central nervous system effects. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However,

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NDA - No Data Available	NA - Not Applicable	

it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (P-M) 124F (51C) (Min.)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NDA Upper: NDA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 1; Flammability 2; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 F.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

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NDA - No Data Available NA - Not Applicable

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Blue liquid.

BOILING POINT: NDA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6 C

VAPOR PRESSURE: NDA

PERCENT VOLATILE (VOLUME %): 20% Approx.

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 30.2 cSt @ 40C Min.

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

Certain geographical areas have air pollution restrictions concerning the use of materials in work situations which may release volatile components to the atmosphere. Air pollution regulations should be studied to determine if this material is regulated in the area where it is to be used.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local

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NDA - No Data Available

NA - Not Applicable

environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON 2-Cycle Oil

CONTAINING

> 70.0 % LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING

CAS64742627 RESIDUAL OILS SOLVENT DEWAXED
5mg/m³ mist ACGIH TLV
10mg/m³ mist ACGIH STEL
5mg/m³ mist OSHA TWA

CAS64742570 RESIDUAL OILS HYDROTREATED
5mg/m³ mist ACGIH TLV
10mg/m³ mist ACGIH STEL
5mg/m³ mist OSHA TWA

CAS64742547 DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
5mg/m³ mist ACGIH TLV
10mg/m³ mist ACGIH STEL
5mg/m³ mist OSHA TWA

CAS64742650 DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

< 20.0 % DISTILLATES, HYDROTREATED LIGHT
CAS64742478

< 10.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563
NDA - No Data Available NA - Not Applicable

10. REGULATORY INFORMATION

DOT basic descriptions can vary based on package quantity and may not coincide with international description requirements. Consult the Hazardous Materials Regulations in 49CFR and the appropriate Dangerous Goods Regulations to confirm description applicability to specific shipments.

DOT SHIPPING NAME: PETROLEUM NAPHTHA MIXTURE
DOT HAZARD CLASS: COMBUSTIBLE LIQUID
DOT IDENTIFICATION NUMBER: UN1255

SARA 311 CATEGORIES:

1.	Immediate (Acute) Health Effects; YES
2.	Delayed (Chronic) Health Effects; NO
3.	Fire Hazard; YES
4.	Sudden Release of Pressure Hazard; NO
5.	Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

RESIDUAL OILS HYDROTREATED

is found on lists: 14,15,17,

RESIDUAL OILS SOLVENT DEWAXED

is found on lists: 14,15,17,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows:

CAS# 64742627 RESIDUAL OILS SOLVENT DEWAXED
CAS# 64742570 HYDROTREATED BOTTOMS
CAS# 64742547 HYDROTREATED HEAVY PARAFFINIC DISTILLATES
CAS# 64742650 DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
New Jersey Right-to-Know trade secret registry number 01154100-5023P

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NDA - No Data Available	NA - Not Applicable	

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking; or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563
NDA - No Data Available NA - Not Applicable

PRODUCT NAME

SSr 727/725

Refer to Material Safety Data Sheet for more information.

SPOKANE STEEL FOUNDRY CO.

P.O. BOX 3305

SPOKANE, WASHINGTON 99220 U.S.A.

AREA CODE 509
924-0440

FIRE HAZARD

4. EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD
3. FIRE AND EXPLOSION HAZARD AT NORMAL TEMP
2. WILL BURN AT TEMPS ABOVE 100 F
1. WILL BURN AT TEMPS ABOVE 200 F
0. WILL NOT BURN

HEALTH HAZARD

4. EXTREME HAZARD - AVOID CONTACT OR BREATHING VAPOR
3. SEVERE HAZARD - USE SPECIAL CLOTHING AND MASKS
2. HAZARDOUS - USE MASKS OR SPECIAL VENTILATION
1. SLIGHTLY HAZARDOUS - IRRITATING
0. NORMAL MATERIAL

REACTIVITY HAZARD

4. EXTREME HAZARD - VACUUM AREA IN CASE OF FIRE
3. SEVERE EXPLOSION HAZARD
2. VIOLENT CHEMICAL CHANGE POSSIBLE
1. UNSTABLE IF HEATED
0. NORMALLY STABLE

ANSI: WARNING! WELDING, CUTTING OR GRINDING ON THIS CASTING WILL GENERATE TOXIC DUST OR FUMES.

INGREDIENTS

(PERCENT)

Chromium	25.0 - 30.0
Iron	Balance
Nickel	0 - 9.0

See Material Safety Data Sheet for a listing of minor ingredients.

STORAGE AND HANDLING

No Special Precautions

MATERIAL SAFETY DATA SHEET (MSDS)

DATE 1-2-92 CODE 06-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION" AND TO VARIOUS STATE
"EMPLOYEE RIGHT TO KNOW" LAWS

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: Chromium based Iron Castings

ASTM No.

A532

ACI alloy designation (Grades)

Class III

=====

VENDOR NAME AND ADDRESS:

Spokane Steel Foundry
P.O. Box 3305
Spokane, Washington 99220

EMERGENCY PHONE NUMBER: (509) 924-0440

FIRE HAZARD CLASS: HEALTH: 0 FLAMMABILITY: 0 REACTIVITY: 0
THE FOURTH DIAMOND:

ANSI: WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING
WILL GENERATE TOXIC DUST OR FUMES.

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Carbon	7440-44-0	2.60-2.80	N/E	N/E
Chromium	7440-47-3	25.5-30.0	0.5 mg/cu.m	1 mg/cu.m
Chromium (VI)* (certain insoluble forms)			0.5 mg/cu.m	N/E
Cobalt	7440-48-4	0-3/50	0.1 mg/cu.m	0.1 mg/cu.m
Columbium (same as Niobium)		0-0.35	N/E	N/E
Copper (as dust)	7440-50-8	0-3.25	1.0 mg/cu.m	1.0 mg/cu.m
(As fume)			0.2 mg/cu.m	0.1 mg/cu.m
Iron (as fume)	7439-89-6	balance	5 mg/cu.m	10 mg/cu.m
Manganese (as dust)	7439-96-5	0.35-1.00	C 5 mg/cu.m	C 5 mg/cu.m
(As fume)			1 mg/cu.m	C 5 mg/cu.m
Molybdenum	7439-98-7	0.30-.40	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	0-9.0	1 mg/cu.m	1 mg/cu.m
Nitrogen	7727-37-9	0-0.18	N/E	N/E
Phosphorus	7723-14-0	0.02-0.060	0.1 mg/cu.m	0.1 mg/cu.m
Silicon	7440-21-3	0.50-0.60	10 mg/cu.m (as nuisance)	15 mg/cu.m
Sulfur	7704-34-9	0.02-0.040	N/E	N/E
Tungsten	7440-33-7	0-1.25	5 mg/cu.m	N/E
Vanadium		0-1.00		
(as vanadium oxide)	1314-62-1			
(As dust)			0.05 mg/cu.m	0.5 mg/cu.m
(As fume)			0.05 mg/cu.m	0.1 mg/cu.m

C means ceiling limit. these are limits which should not be exceeded, even for a short time. all other are 8 hr Timeweighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

N/E means none established.

N/A means not applicable.

N/D means no data available.

SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 30 percent chromium, and up to 9 percent nickel, airborne contaminants from machining or welding will contain chromium and nickel dust or fume. If total welding fume is adequately controlled, chromium and nickel will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain moderate levels of manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Carbon, cobalt, copper, niobium, nitrogen, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If airborne concentrations of total dust and fume are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor

BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A

VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

N/E means none established.

N/A means not applicable.

N/D means no data available.

SPECIFIC GRAVITY: 7.86 for iron
PERCENT VOLATILE BY VOLUME: N/A
EVAPORATION RATE: N/A

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known.

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

===== FIRST AID =====

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

=====

N/A means not applicable.

N/D means no data available.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

=====

N/E means none established.

N/A means not applicable.

N/D means no data available.

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061
Emergency No. 1-800-535-5053 (NFOTRAC)
Call Nearest Sales Office for MSDS Information

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT*

Product Name: BORAX HAND SOAP

Date Issued: 01/15/92
Supercedes: 07/05/90
National Item#: 1236XX

Chemical Name And Synonyms: SODIUM BORATE ANHYDROUS
Chemical Family: SOAP FAMILY

Formula: Na2B4O7

SECTION 2. INGREDIENTS	CAS #	OSHA PEL	ACGIH TLV	%
SODIUM TETRABORATE DECAHYDRATE	1303-96-4	10 MG/M3	5 M/GM3	65-75

SECTION 3. PHYSICAL DATA

Boiling Point (F): NA	Specific Gravity (H2O=1) N/E
Vapor Pressure (mm Hg.): NA	Melting Point: N/A
Vapor Density (Air=1): NA	Evaporation Rate (ButylAcetate=1): N/A
Solubility in Water: COMPLETE	pH Range: 7-7F
Appearance and Odor: POWDER, ODORLESS PINK OR WHITE (AS PREFERRED)	

SECTION 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): NON COMBUSTIBLE
Flammable Limits: N/A LEL= UEL=
Extinguishing Media: PRODUCT IS FIRE RETARDANT

Special Fire Fighting Procedures: NONE

Unusual Fire & Explosion Hazards: NONE-FIRE RETARDANT

SECTION 5. REACTIVITY DATA

Stability: EXCELLENT, STABLE Conditions to Avoid: NONE

Compatibility - Materials to Avoid: N/A

Hazardous Polymerization: WILL NOT OCCUR

Conditions to Avoid: NONE

Hazardous Decomposition ByProducts: NONE KNOWN

SECTION 6. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in Case Material Is Released or Spilled:

Small Spill: SWEEP UP MATERIAL FOR DISPOSAL OR RECOVERY.
Large Spill: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF
SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

Waste Disposal Method:

Small Spill: PACKAGE MATERIAL IN PAPER AND DEPOSIT IN LANDFILL IN ACCORDANCE
WITH LOCAL, STATE AND FEDERAL REGULATIONS.
Large Spill: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND
FEDERAL REGULATIONS.

MATERIAL SAFETY DATA SHEET
Product Name: BORAX HAND SOAP
Date Issued: 01/15/92

PAGE 2

SECTION 7. HEALTH HAZARD DATA

Route(s) of Entry: INHALATION, EYES,
(Acute) Health Hazards
EYE CONTACT WILL CAUSE IRRITATION.

SKIN CONTACT MAY CAUSE MINOR IRRITATION TO PERSONS WITH UNSUALLY SENSITIVE SKIN BECAUSE OF ABRASIVE CHARACTERISTICS OF THIS PRODUCT.

BREATHING OF DUST CAN CAUSE IRRITATION OF NASAL AND RESPIRATORY PASSAGES.

SWALLOWING CAN CAUSE NAUSEA, VOMITING, DIARRHEA, WEAKNESS, DEPRESSION, HEADACHES, SKIN RASHES, DRY SKIN, LOSS OF HAIR, CRACKED LIPS, SHOCK.

(Chronic) Health Hazards: NONE KNOWN

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

First Aid:

If On Skin: THOROUGHLY RINSE EXPOSED AREA WITH WATER. REMOVE CONTAMINATED CLOTHING. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE.

If In Eyes: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY; GET MEDICAL ATTENTION.

If Swallowed: IMMEDIATELY DRINK TWO GLASSES OF WATER AND INDUCE VOMITING BY EITHER GIVING IPECAC SYRUP OR BY PLACING FINGER AT BACK OF THROAT. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION IMMEDIATELY.

If Breathing Is Affected: REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

SECTION 9. TOXICITY DATA

Carcinogenicity: NO NTP? IARC MONOGRAPHS? OSHA REGULATED?

SECTION 10. CONTROL MEASURES

Respiratory Protection (Specify Type): NONE NEEDED WHEN USED AS HAND CLEANER

SECTION 11. DOT HAZARDOUS INFORMATION

Proper Shipping Name: CLEANING POWDER, NON REGULATED

HAZARD RATING: FIRE-0 TOXICITY-0 REACTIVITY-0 SPECIAL-0

ALL INFORMATION, RECOMMENDATIONS, AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND /OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, CHEMRITE MAKES NO WARRANTY, REPRESENTATION OR GUARANTY AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, MADE BY CHEMRITE AS TO THE EFFECTS OF SUCH USE, THE RESULTS TO BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES CHEMRITE ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT.

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061

Manufacturer:
CLDE TYME PRODUCTS, INC.
1253 E. Artesa
Carson, CA 90746
Emergency Tel. No. 213/537-4311
OR 800-445-8190

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: BRITE BOY METAL POLISH
Chemical Name: NA-MIXTURE
Chemical Family: NA-MIXTURE

Date Issued: 01/17/92
Supersedes: 11/08/89
National Item#: 3242XX

SECTION 2. INGREDIENTS CAS NUMBER PERCENT TLV UNITS

INGREDIENTS	CAS NUMBER	PERCENT	TLV UNITS
AMMONIA HYDROXIDE	7664417		25 PPM
OXALIC ACID	144627		1 MG/M3

SECTION 313 SUPPLIER NOTIFICATION: THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 AND OF 40 CFR 372:

CAS#	CHEMICAL NAME	PERCENT BY WEIGHT
NONE		

THIS INFORMATION MUST BE INCLUDED IN ALL MSDS's THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.

SECTION 3. EMERGENCY AND FIRST AID ACUTE HEALTH HAZARDS

CONTAINS AMMONIA, AVOID CONTACT WITH EYES. IN CASE OF EYE CONTACT, FLUSH WITH WATER FOR 15 MINUTES. CALL PHYSICIAN. IF SWALLOWED, INDUCE VOMITING. ALL PHYSICIAN.

CARCINOGENICITY: NO

SECTION 4. PHYSICAL DATA

Specific Gravity (Water=1):	N/A	Evaporation Rate (=1):	N/A
Vapor Density (Air=1):	N/A	Physical Form:	LIQUID
Solubility in Water:	COMPLETE		
Appearance:	OFF WHITE, AMMONIA ODOR		

Section 5. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): NON-COMBUSTIBLE

Extinguishing Media: NOT APPLICABLE

Special Fire Fighting Procedures: NA

Unusual Fire and Explosion Hazards: NA

Hazardous Thermal Decomposition Products: CO, CO2 (1010)

SECTION 6. REACTIVITY DATA

Stability: Conditions to Avoid:

Incompatibility - Materials to Avoid: NONE

Hazardous Polymerization: WILL NOT OCCUR Conditions to Avoid:

Hazardous Decomposition Products: N/A

Conditions To Avoid: HIGH TEMPERATURES, POOR VENTILATION

SECTION 7. SPILL, LEAK PROCEDURES

Primary Route(s) of Entry: EYES, HANDS

Steps To Be Taken In Case Material Is Released or Spilled:
WASH AWAY WITH WATER.

Waste Disposal Method: RCRA HAZARDOUS WASTE - NO
FOLLOW ALL FEDERAL, STATE AND LOCAL WASTE DISPOSAL REGULATIONS.

MATERIAL SAFETY DATA SHEET
Product Name: BRITE BCY METAL POLISH
Date Issued: 01/17/92

PAGE 2

SECTION 8. SPECIAL PROTECTION INFORMATION

Respiratory Protection: REQUIRED - NO

Ventilation: REQUIRED - YES Type: LOCAL EXHAUST

Eye Protection: REQUIRED - NO

Skin Protection: REQUIRED - NO

SECTION 9. SPECIAL PRECAUTIONS

Precautions To Be Taken In Handling And Storing:
KEEP OUT OF REACH OF CHILDREN.

SECTION 10. EFFECTS OF LONG TERM EXPOSURE

UNKNOWN

SECTION 11. DOT PROPER SHIPPING NAME/HAZARD CLASS

NOT DOT HAZARD

THIS FORM COMPLIES WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29CFR
1910-1200. EQUIVALENT TO OSHA FORM 174.

THIS INFORMATION IS GIVEN WITHOUT A WARRANTY OR REPRESENTATION. WE DO NOT
ASSUME ANY LEGAL RESPONSIBILITY FOR SAME, NOR DO WE GIVE PERMISSION,
INDUCEMENT, OR RECOMMENDATION TO PRACTICE ANY PATENTED INVENTION WITHOUT
A LICENSE. IT IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION AND
VERIFICATION. BEFORE USING ANY PRODUCT, READ ITS LABEL.



Material Safety Data Sheet

CHEVRON Moly Grease EP NLGI 2

CPS255660

Page 1 of 7

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to indicate name change from "CHEVRON Moly EP Grease NLGI 2" to "CHEVRON Moly Grease EP NLGI 2"

1. PRODUCT IDENTIFICATION

CHEVRON Moly Grease EP NLGI 2

PRODUCT NUMBER(S): CPS255660
PRODUCT INFORMATION: (800)582-3835

Revision Number: 1	Revision Date: 01/21/92	MSDS Number: 005062
NDA - No Data Available	NA - Not Applicable	

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This

Revision Number: 1**Revision Date: 01/21/92****MSDS Number: 005062****NDA - No Data Available****NA - Not Applicable**

hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

VENTILATION:

No special ventilation is necessary.

5. FIRE PROTECTION

FLASH POINT: NA

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NEPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NA.

STABILITY:

Stable.

Revision Number: 1**Revision Date: 01/21/92****MSDS Number: 005062****NDA - No Data Available****NA - Not Applicable**

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Grey-colored grease.

BOILING POINT: NA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.98 @ 20/20C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 200 cSt @ 40C (oil)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Moly Grease EP NLGI 2

Revision Number: 1

Revision Date: 01/21/92

MSDS Number: 005062

NDA - No Data Available

NA - Not Applicable

CONTAINING

< 90.0 % DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC
CAS64742525 5 mg/m3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
CAS64742547 5mg/3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

< 5.0 % MOLYBDENUM DISULFIDE
CAS1317335 10 mg/m3 MO ACGIH TLV

< 5.0 % LITHIUM BASE THICKENERS

< 1.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1.	Immediate (Acute) Health Effects; NO
2.	Delayed (Chronic) Health Effects; NO
3.	Fire Hazard; NO
4.	Sudden Release of Pressure Hazard; NO
5.	Reactivity Hazard; NO

The following components of this material are found on the regulatory
lists indicated by the number below the component name:

MOLYBDENUM DISULFIDE

is found on lists: 11,14,

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

REGULATORY LISTS SEARCHED:

01=SARA 313

02=MASS RTK

03=NTP Carcinogen

04=CA Prop. 65

05=MI 406

06=IARC Group 1

Revision Number: 1

Revision Date: 01/21/92

MSDS Number: 005062

NDA - No Data Available

NA - Not Applicable

07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility.

Revision Number: 1	Revision Date: 01/21/92	MSDS Number: 005062
NDA - No Data Available	NA - Not Applicable	

ity for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 01/21/92 MSDS Number: 005062
NDA - No Data Available NA - Not Applicable

Material Safety Data Sheet

Ash Grove Cement West, Inc.

Manufacturer

6720 SW Macadam Ave. #300

Address

Portland, OR 97219-2312

(503) 293-2333

Phone Number (For Information)

(503) 293-2333

Emergency Phone Number

Fax

LIMESTONE ROCK

Identity (Trade Name As Used On Label)

MSDS Number

CAS Number

1/92

Date Prepared

J. W. Post

Prepared By

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

SECTION 1 - MATERIAL IDENTIFICATION AND INFORMATION

COMPONENTS - Chemical Name (Hazardous Components 1% or greater; Carcinogens 0.1% or greater)	Common Name	%	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOMMENDED
Calcium carbonate, Limestone, CaCO_3 , naturally occurring silicates of Magnesium, Iron, Aluminum, Potassium and Sodium					
Non-Hazardous Ingredients					
TOTAL		100			

SECTION 2 - PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point	N.A.	Specific Gravity (H ₂ O = 1)	2.7
Vapor Pressure (mm Hg and Temperature)	N.A.	Melting Point	N.A.
Vapor Density (Air = 1)	N.A.	Evaporation Rate (_____ = 1)	N.A.
Solubility in Water	slight-about 0.01%	Water Reactive	No
Appearance and Odor	6 inch to 18 inch minus rock		

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

Flash Point and Method Used	N.A.	Auto-ignition Temperature	N.A.	Flammability Limits in Air % by volume	N.A.	LEL	N.A.	UEL	N.A.
Extinguisher Media	N.A.								
Special Fire Fighting Procedures	N.A.								
Unusual Fire and Explosion Hazards	None								

SECTION 4 - REACTIVITY HAZARD DATA

STABILITY <input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable	Conditions To Avoid None
Incompatibility (Materials to Avoid)	None
Hazardous Decomposition Products	None
HAZARDOUS POLYMERIZATION <input type="checkbox"/> May Occur <input checked="" type="checkbox"/> Will Not Occur	Conditions To Avoid None

SECTION 5 - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY	<input checked="" type="checkbox"/> Inhalation <input type="checkbox"/> Skin Absorption	<input type="checkbox"/> Ingestion <input type="checkbox"/> Not Hazardous	CARCINOGEN LISTED IN	<input type="checkbox"/> NTP <input type="checkbox"/> IARC Monograph	<input type="checkbox"/> OSHA <input checked="" type="checkbox"/> Not Listed
HEALTH HAZARD:	Acute Can irritate eyes and upper respiratory system. Chronic Can cause inflammation of the cornea and upper respiratory system.				
Signs and Symptoms of Exposure	Mechanical irritation of eyes or respiratory system.				
Medical Conditions Generally Aggravated by Exposure	N.A.				
EMERGENCY FIRST AID PROCEDURES - Seek medical assistance for further treatment, observation and support if necessary.					
Eye Contact	Flush eyes with water.				
Skin Contact	N.A.				
Inhalation	Breathe clean air.				
Ingestion	N.A.				

SECTION 6 - CONTROL AND PROTECTIVE MEASURES

Respiratory Protection (Specify Type)	Use NIOSH approved respirator.		
Protective Gloves	N.A.	Eye Protection	Use tight fitting goggles.
VENTILATION TO BE USED	<input checked="" type="checkbox"/> Local Exhaust <input type="checkbox"/> Other (specify)	<input type="checkbox"/> Mechanical (general)	<input type="checkbox"/> Special
Other Protective Clothing and Equipment	N.A.		
Hygienic Work Practices	N.A.		

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE / LEAK PROCEDURES

Steps to be Taken if Material is Spilled Or Released	Use cleanup methods which do not disperse the dust into the air. Avoid breathing dust. Wet cleanup is OK.			
Waste Disposal Methods	Can be disposed of as common waste; can be used agriculturally.			
Precautions to be Taken in Handling and Storage	None			
Other Precautions and/or Special Hazards	None			
NIHA Rating* Health	Flammability	Reactivity	Special	HMIS Rating* Health
				Flammability
				Reactivity
				Personal Protection

* Chemical



KAR PRODUCTS

**IMPORTANT - CONTAINS MATERIAL SAFETY DATA SHEETS (MSDS).
PLEASE ROUTE TO PROPER PERSON OR DEPARTMENT.**

We have enclosed Material Safety Data Sheets for products your company purchased from Kar Products. Our order number, invoice number and your purchase order number are shown below.

We are committed to helping you comply with the OSHA Hazard Communications Standard which requires that all personnel who may be exposed to hazardous materials must be provided by their employer with accurate information regarding the potential hazards of the materials they are using and trained in proper work practices to minimize any risk to your employees.

It is of critical importance that these MSDS sheets are forwarded to the person in your company responsible for implementing these regulations.

This packet was prepared by a computerized system which automatically prints and mails an MSDS when a product is first ordered by a customer or when there has been a change to the MSDS. Kar Products is committed to providing the service you need, and we ask that you contact your sales representative if you have questions or problems in this regard. If this is not convenient, please call Bobbie Cunnally at 1-708-296-6111 extension 6079.

ASH GROVE CEMENT WEST
13939 N RIVERGATE BLVD

PORTLAND, OR 97203

ORDER:
320652

INVOICE:
002452

CUST NO:
30255000

PROD. CODE

KAR PART #

DESCRIPTION:

75687
79970

78831-00
83488-02

ABRASIVE FLAP WHEEL
ROLOC SURF.COND.DISC

PRODUCT CODE: 75687-75688

PRODUCT NAME: A/O FLAP WHEEL 78827-78834

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **A/O FLAP WHEEL 78827-78834****SECTION I - PRODUCT IDENTIFICATION****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111Date Entered: 02/05/92
Last Revision: 03/01/93
MSDS Printed: 03/30/95**SYNONYMS:****CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
ABRASIVE MATERIAL	NA			SEE SEC.IX	1.0 - 99.0

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS**BOILING POINT:** NE or NA**SPECIFIC GRAVITY (WATER = 1):** NA**MELTING POINT:** NE or NA**VAPOR PRESSURE (MM HG):** . . . NA**PHYSICAL STATES:** [] Gas
[] Liquid
[X] Solid**VAPOR DENSITY (AIR=1):** . . . NA**EVAPORATION RATE:** NA

(Butyl Acetate=1)

SOLUBILITY IN WATER: Not Known**PERCENT VOLATILE:** NE or NA**APPEARANCE AND ODOR:**

Solid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA**FLASH PT:** NE or NA **METHOD USED:** Not known**EXPLOSIVE LIMITS:****LEL:****UEL:****EXTINGUISHING MEDIA:**

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

SECTION V - REACTIVITY DATA**STABILITY:** Unstable [] Stable [X]**CONDITIONS TO AVOID - INSTABILITY:****INCOMPATIBILITY - MATERIALS TO AVOID:****HAZARDOUS DECOMPOSITION OR BYPRODUCTS:****HAZARDOUS POLYMERIZATION:** May occur [] Will not occur [X]**CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:****SECTION VI - HEALTH HAZARD DATA****ROUTE(S) OF ENTRY:** Inhalation? Skin? Eyes? Ingestion? Other:**HEALTH HAZARDS (Acute and Chronic):**During the dust - fluoride (AS F) - 2.5mg/m³; inert or nuisance dust: respirable fraction 5mg/m³, total dust - 15mg/m³. (Federal OSHA permissible exposure limit).**CARCINOGENITY:** NTP? IARC Monographs? OSHA Regulated? Not known.**RECOMMENDED EXPOSURE LIMITS:**

LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:

NA

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

None known.

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation: Provide fresh air. Eyes: Flush with plenty of water. Mechanical irritations only. Skin: May cause abrasions - obtain MD assistance if needed.

101c. to Kar Products

PRODUCT CODE: 75687-75688

PRODUCT NAME: A/O FLAP WHEEL 78827-78834

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

No special procedures.

WASTE DISPOSAL METHOD:

No special procedures.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Normal precautions should be taken for nuisance dust and particulates generated during grinding which will principally be from the workpiece rather than the product.

OTHER PRECAUTIONS:

Utilize approved respiratory protection from nuisance dust.

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE):**VENTILATION:****LOCAL EXHAUST:** Local exh. to keep airborne concentr. below limits**SPECIAL:****MECHANICAL (GENERAL):****OTHER:****PROTECTIVE GLOVES:** Prot. gloves recom. when grinding.**EYE PROTECTION:** Face shield or safety glasses.**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:** Safety glasses & prot. clothing must be worn when operating power.**WORK/HYGIENIC/MAINTENANCE PRACTICES:**

NA

SECTION IX - ADDITIONAL COMMENTS

Section II

HUB is an article and does not release or result in exposure to a hazardous chemical under normal conditions of use.

Abrasive Material: Fastcut Resin Cloth A(180 & C) x 875 F
Cryolite (NA1ALF6) 15 mgm3



KAR PRODUCTS

**IMPORTANT - CONTAINS MATERIAL SAFETY DATA SHEETS (MSDS).
PLEASE ROUTE TO PROPER PERSON OR DEPARTMENT.**

We have enclosed Material Safety Data Sheets for products your company purchased from Kar Products. Our order number, invoice number and your purchase order number are shown below.

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It is of critical importance that these MSDS sheets are forwarded to the person in your company responsible for implementing these regulations.

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ASH GROVE CEMENT WEST
13939 N RIVERGATE BLVD

PORTLAND, OR 97203

ORDER:
321002

INVOICE:
030769

CUST NO:
30255000

PROD. CODE

KAR PART #

DESCRIPTION:

75687

78828-00

ABRASIVE FLAP WHEEL

75687

78830-00

ABRASIVE FLAP WHEEL

PRODUCT CODE: 75687-75688

PRODUCT NAME: A/O FLAP WHEEL 78827-78834

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **A/O FLAP WHEEL 78827-78834****SECTION I - PRODUCT IDENTIFICATION****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111Date Entered: 02/05/92
Last Revision: 03/01/93
MSDS Printed: 04/18/95**SYNONYMS:****CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
ABRASIVE MATERIAL	NA			SEE SEC. IX	1.0 - 99.0

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS**BOILING POINT:** NE or NA**SPECIFIC GRAVITY (WATER = 1):** NA**MELTING POINT:** NE or NA**VAPOR PRESSURE (MM HG):** NA**PHYSICAL STATES:** [] Gas
[] Liquid
[X] Solid**VAPOR DENSITY (AIR=1):** NA**EVAPORATION RATE:** NA

(Butyl Acetate=1)

SOLUBILITY IN WATER: Not Known**PERCENT VOLATILE:** NE or NA**APPEARANCE AND ODOR:**

Solid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA**FLASH PT:** NE or NA **METHOD USED:** Not known**EXPLOSIVE LIMITS:****LEL:****UEL:****EXTINGUISHING MEDIA:**

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

SECTION V - REACTIVITY DATA**STABILITY:** Unstable [] Stable [X]**CONDITIONS TO AVOID - INSTABILITY:****INCOMPATIBILITY - MATERIALS TO AVOID:****HAZARDOUS DECOMPOSITION OR BYPRODUCTS:****HAZARDOUS POLYMERIZATION:** May occur [] Will not occur [X]**CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:****SECTION VI - HEALTH HAZARD DATA****ROUTE(S) OF ENTRY:** Inhalation? Skin? Eyes? Ingestion? Other:**HEALTH HAZARDS (Acute and Chronic):**During the dust - fluoride (AS F) - 2.5mg/m³; inert or nuisance dust: respirable fraction 5mg/m³, total dust - 15mg/m³; (Federal OSHA permissible exposure limit).**CARCINOGENITY:** NTP? IARC Monographs? OSHA Regulated? Not known.**RECOMMENDED EXPOSURE LIMITS:** LD 50/LC 50:**SIGNS AND SYMPTOMS OF EXPOSURE:**

NA

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

None known.

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation: Provide fresh air. Eyes: Flush with plenty of water. Mechanical irritations only. Skin: May cause abrasions - obtain MD assistance if needed.

PRODUCT CODE: 75687-75688

PRODUCT NAME: A/O FLAP WHEEL 78827-78834

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USESTEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

No special procedures.

WASTE DISPOSAL METHOD:

No special procedures.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Normal precautions should be taken for nuisance dust and particulates generated during grinding which will principally be from the workpiece rather than the product.

OTHER PRECAUTIONS:

Utilize approved respiratory protection from nuisance dust.

SECTION VIII- CONTROL MEASURESRESPIRATORY PROTECTION (SPECIFY TYPE):VENTILATION:LOCAL EXHAUST: Local exh. to keep airborne concentr. below limits SPECIAL:MECHANICAL (GENERAL): OTHER:PROTECTIVE GLOVES: Prot. gloves recom. when grinding.EYE PROTECTION: Face shield or safety glasses.OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Safety glasses & prot. clothing must be worn when operating power.WORK/HYGIENIC/MAINTENANCE PRACTICES:

NA

SECTION IX - ADDITIONAL COMMENTS

Section II

HUB is an article and does not release or result in exposure to a hazardous chemical under normal conditions of use.

Abrasive Material: Fastcut Resin Cloth A(180 & C) x 875 F
Cryolite (NA1ALF6) 15 mgm3

PRODUCT CODE: 80791-80802

PRODUCT NAME: KAR ZIRCONIA ALUMINA DISCS

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **KAR ZIRCONIA ALUMINA DISCS****SECTION I - Product Identification****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111

Date Entered: 02/15/92

Last Revision: 02/02/93

MSDS Printed: 10/28/93

SYNONYMS:**CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - Hazardous Ingredients/Identity Information**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
Aluminum Oxide	1349-28-1	15mg/m3	10mg/m3		0.1 - 99.0
Sodium Aluminum Fluoride	15096-52-3	ND	2-5mg/m3		0.1 - 99.0

SECTION III - Physical/Chemical Characteristics**BOILING POINT:** NE or NA**SPECIFIC GRAVITY (Water = 1):** NA**MELTING POINT:** NE or NA**VAPOR PRESSURE (mm Hg):** . . . NA**VAPOR DENSITY (Air=1):** . . . NA**PHYSICAL STATES:** [] Gas**EVAPORATION RATE:** NA

[] Liquid

(Butyl Acetate=1)

[X] Solid

SOLUBILITY IN WATER: NA**PERCENT VOLATILE:****APPEARANCE AND ODOR:**

Fibre coated with abrasive material.

SECTION IV - Fire and Explosion Hazard Data**FLASH PT:** NE or NA**METHOD USED:** NA**EXPLOSIVE LIMITS:**

LEL: NA

UEL: NA

EXTINGUISHING MEDIA:

NA

SPECIAL FIRE FIGHTING PROCEDURES:

Fibre and resin adhesive will burn and decompose; use respiratory protection.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

SECTION V - Reactivity Data**STABILITY:** Unstable [] Stable [X]**CONDITIONS TO AVOID (Instability):**

NA

INCOMPATIBILITY (MATERIALS TO AVOID):

NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

During use, dust and decomposing resin fumes are generated. NOTE: The material being ground will, generally, create substantially greater amounts of airborne particles.

HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]**CONDITIONS TO AVOID (Hazardous Polymerization):**

NA

SECTION VI - Health Hazard Data**ROUTE(S) OF ENTRY:** Inhalation? Y Skin? Y Eyes? Ingestion? Y Other:**HEALTH HAZARDS (Acute and Chronic):**

Inhalation during use could cause coughing and shortness of breath due to dust and may affect breathing.

CARCINOGENITY: NTP? IARC Monographs? OSHA Regulated? This product is not carcinogenic. It is regulated.**RECOMMENDED EXPOSURE LIMITS:** LD 50/LC 50:**SIGNS AND SYMPTOMS OF EXPOSURE:**

Coughing and shortness of breath (due to dust); ingestion very unlikely; not absorbed through skin but may cause abrasions; dust may irritate eyes; on some grinding elevated sound levels, may be created which could affect hearing.

PRODUCT CODE: 80791-80802

PRODUCT NAME: KAR ZIRCONIA ALUMINA DISCS

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

None known.

EMERGENCY AND FIRST AID PROCEDURES:

Remove person to fresh air; and if needed, apply artificial respiration. Call physician. No known adverse effects from ingestion; however, obtain medical MD attn. Obtain MD attn. if hearing affected.

SECTION VII - Precautions for Safe Handling & Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Normal clean-up.

WASTE DISPOSAL METHOD:

Standard landfill consistent with Local, State and Federal regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:HAZARD LABEL INFORMATION:

Adequate ventilation (OSHA 29 CFR 1910.94-Ventilation) and (OSHA 29 CFR 1910.1000- Air Contaminates.) During storage occasionally, a formaldehyde or phenolic resin odor may be released.

OTHER PRECAUTIONS:

NA

SECTION VIII - Control Measures

PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): As required- dust respirator (OSHA 24 CFR 1910.134)

VENTILATION:LOCAL EXHAUST:MECHANICAL (GENERAL):SPECIAL:OTHER:

PROTECTIVE GLOVES: Recommended

EYE PROTECTION: Face and eye protection

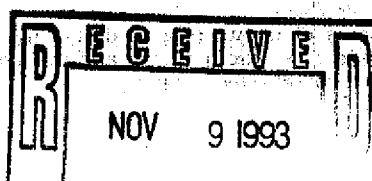
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Hearing protection- OSHA CR 1910.215.

WORK/HYGIENIC/MAINTENANCE PRACTICES:

Follow directions and use protective measures.

SECTION IX - Additional Comments

SECTION VIII: VENTILATION: Local Exhaust: Required during use - adequate ventilation (OSHA FR 1910.243 portable sanding machines)



PRODUCT CODE: 79970 - 79972 PRODUCT NAME: SURFACE CONDITIONING DISCS (77960-77962)

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **SURFACE CONDITIONING DISCS (77960-77962)****SECTION I - Product Identification****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111

Date Entered: 02/15/92

Last Revision: 02/24/93

MSDS Printed: 10/28/93

SYNONYMS:**CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - Hazardous Ingredients/Identity Information**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
Nylon Fibers	NYLON FIBERS	NA			5.0 - 35.0
PHENOL-FORMALDEHYDE	9003-35-4	NA			0.0 - 33.0
POLY (METHYL METHACRYLATE)	9011-14-7	NA			0.0 - 33.0
Epoxy Resin	EPOXY RESIN	NA			0.0 - 33.0
Abrasive particles	ABRASIVE PAR	10mg/m3(TWA)			10.0 - 65.0

SECTION III - Physical/Chemical Characteristics**BOILING POINT:** NE or NA**MELTING POINT:****PHYSICAL STATES:**☐ Gas
☐ Liquid
☒ Solid**SPECIFIC GRAVITY (Water = 1):** ND**VAPOR PRESSURE (mm Hg):** . . . NA**VAPOR DENSITY (Air=1):** . . . NA**EVAPORATION RATE:** NA

(Butyl Acetate=1)

SOLUBILITY IN WATER: Insoluble**PERCENT VOLATILE:** 0.0 % by weight.**pH:** NA**APPEARANCE AND ODOR:**

Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders.

Viscosity: NA**SECTION IV - Fire and Explosion Hazard Data****FLASH PT:** NE or NA**METHOD USED:** NA**EXPLOSIVE LIMITS:****LEL:** NA**UEL:** NA**EXTINGUISHING MEDIA:**

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

NA

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

SECTION V - Reactivity Data**STABILITY:** Unstable ☐ Stable ☒**CONDITIONS TO AVOID (Instability):**

NA

INCOMPATIBILITY (MATERIALS TO AVOID):

NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

When subjected to flaming conditions, carbon dioxide, carbon monoxide, oxides of nitrogen and cyanides.

HAZARDOUS POLYMERIZATION: May occur ☐ Will not occur ☒**CONDITIONS TO AVOID (Hazardous Polymerization):**

NA

SECTION VI - Health Hazard Data**ROUTE(S) OF ENTRY:** Inhalation? Y Skin? Y Eyes? Y Ingestion? N Other:**HEALTH HAZARDS (Acute and Chronic):**

Eye contact - Mechanical only; Skin contact - Mechanical only;

Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSHA-respirable fraction 10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS (77960-77962)

CARCINOGENITY: NTP? IARC Monographs? OSHA Regulated?

RECOMMENDED EXPOSURE LIMITS:LD 50/LC 50:SIGNS AND SYMPTOMS OF EXPOSURE:MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plenty of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide fresh air. Ingestion: Not applicable.

SECTION VII - Precautions for Safe Handling & Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:HAZARD LABEL INFORMATION:

NA

OTHER PRECAUTIONS:

NA

SECTION VIII - Control Measures

PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATIONRESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.VENTILATION:LOCAL EXHAUST: See "Respiratory Protection".MECHANICAL (GENERAL):SPECIAL:OTHER:EYE PROTECTION: See Section IX.PROTECTIVE GLOVES:OTHER PROTECTIVE CLOTHING OR EQUIPMENT:WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - Additional Comments

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.



KAR PRODUCTS

**IMPORTANT - CONTAINS MATERIAL SAFETY DATA SHEETS (MSDS).
PLEASE ROUTE TO PROPER PERSON OR DEPARTMENT.**

We have enclosed Material Safety Data Sheets for products your company purchased from Kar Products. Our order number, invoice number and your purchase order number are shown below.

We are committed to helping you comply with the OSHA Hazard Communications Standard which requires that all personnel who may be exposed to hazardous materials must be provided by their employer with accurate information regarding the potential hazards of the materials they are using and trained in proper work practices to minimize any risk to your employees.

It is of critical importance that these MSDS sheets are forwarded to the person in your company responsible for implementing these regulations.

This packet was prepared by a computerized system which automatically prints and mails an MSDS when a product is first ordered by a customer or when there has been a change to the MSDS. Kar Products is committed to providing the service you need, and we ask that you contact your sales representative if you have questions or problems in this regard. If this is not convenient, please call Bobbie Cunnally at 1-708-296-6111 extension 6079.

ASH GROVE CEMENT WEST
13939 N RIVERGATE BLVD
PORTLAND, OR 97203

ORDER:
320158

INVOICE:
976142

CUST NO:
30255000

PROD. CODE

KAR PART #

DESCRIPTION:

79970

79971-00

SURFACE COND.DISC

PRODUCT CODE: 79970 - 79972 PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)****SECTION I - PRODUCT IDENTIFICATION****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111Date Entered: 02/15/92
Last Revision: 03/24/94
MSDS Printed: 03/15/95**SYNONYMS:****CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
Nylon Fibers	NA	NA			5.0 - 35.0
PHENOL-FORMALDEHYDE	9003-35-4	NA			0.0 - 33.0
POLY (METHYL METHACRYLATE)	9011-14-7	NA			0.0 - 33.0
Epoxy Resin	NA	NA			0.0 - 33.0
Abrasive particles	NA	10mg/m3(TWA)			10.0 - 65.0

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS**BOILING POINT:** NE or NA**MELTING POINT:****PHYSICAL STATES:** [] Gas
[] Liquid
[X] Solid**SPECIFIC GRAVITY (WATER = 1):** ND
VAPOR PRESSURE (MM HG): . . . NA
VAPOR DENSITY (AIR=1): . . . NA
EVAPORATION RATE: NA
(Butyl Acetate=1)
SOLUBILITY IN WATER: Insoluble**PH:** NA**PERCENT VOLATILE:** 0.0 % by weight.**APPEARANCE AND ODOR:**

Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders.

Viscosity: NA**SECTION IV - FIRE AND EXPLOSION HAZARD DATA****FLASH PT:** NE or NA**METHOD USED:** NA**EXPLOSIVE LIMITS:****LEL:** NA**UEL:** NA**EXTINGUISHING MEDIA:**

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

NA

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

SECTION V - REACTIVITY DATA**STABILITY:** Unstable [] Stable [X]**CONDITIONS TO AVOID - INSTABILITY:**

NA

INCOMPATIBILITY - MATERIALS TO AVOID:

NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

When subjected to flaming conditions, carbon dioxide, carbon monoxide, oxides of nitrogen and cyanides.

HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]**CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:**

NA

SECTION VI - HEALTH HAZARD DATA**ROUTE(S) OF ENTRY:** Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? No Other:**HEALTH HAZARDS (Acute and Chronic):**

Eye contact - Mechanical only; Skin contact - Mechanical only;

Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSHA-respirable fraction
10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP? IARC Monographs? OSHA Regulated?
RECOMMENDED EXPOSURE LIMITS: LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plenty of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

NA

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.VENTILATION:LOCAL EXHAUST: See "Respiratory Protection".SPECIAL:MECHANICAL (GENERAL):OTHER:PROTECTIVE GLOVES:EYE PROTECTION: See Section IX.OTHER PROTECTIVE CLOTHING OR EQUIPMENT:WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

271995

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

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IDENTITY (As Used on Label and List): **SURFACE CONDITIONING DISCS(77960-77962) (83488-83493)****SECTION I - PRODUCT IDENTIFICATION****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
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Last Revision: 03/24/94
MSDS Printed: 03/30/95**SYNONYMS:****CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
Nylon Fibers	NA	NA			5.0 - 35.0
PHENOL-FORMALDEHYDE	9003-35-4	NA			0.0 - 33.0
POLY (METHYL METHACRYLATE)	9011-14-7	NA			0.0 - 33.0
Epoxy Resin	NA	NA			0.0 - 33.0
Abrasive particles	NA	10mg/m3(TWA)			10.0 - 65.0

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS**BOILING POINT:** NE or NA**SPECIFIC GRAVITY (WATER = 1):** ND**MELTING POINT:****VAPOR PRESSURE (MM HG):** . . . NA**VAPOR DENSITY (AIR=1):** . . . NA**PHYSICAL STATES:** [] Gas**EVAPORATION RATE:** NA

[] Liquid

(Butyl Acetate=1)

[X] Solid

SOLUBILITY IN WATER: Insoluble**PH:** NA**PERCENT VOLATILE:** 0.0 % by weight.**APPEARANCE AND ODOR:**

Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders.

Viscosity: NA**SECTION IV - FIRE AND EXPLOSION HAZARD DATA****FLASH PT:** NE or NA**METHOD USED:** NA**EXPLOSIVE LIMITS:****LEL:** NA**UEL:** NA**EXTINGUISHING MEDIA:**

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

NA

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

SECTION V - REACTIVITY DATA**STABILITY:** Unstable [] Stable [X]**CONDITIONS TO AVOID - INSTABILITY:**

NA

INCOMPATIBILITY - MATERIALS TO AVOID:

NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

When subjected to flaming conditions, carbon dioxide, carbon monoxide, oxides of nitrogen and cyanides.

HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]**CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:**

NA

SECTION VI - HEALTH HAZARD DATA**ROUTE(S) OF ENTRY:** Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? No Other:**HEALTH HAZARDS (Acute and Chronic):**

Eye contact - Mechanical only; Skin contact - Mechanical only;

Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSHA-respirable fraction

10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP? IARC Monographs? OSHA Regulated?

RECOMMENDED EXPOSURE LIMITS:LD 50/LC 50:SIGNS AND SYMPTOMS OF EXPOSURE:MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plenty of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

NA

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.VENTILATION:LOCAL EXHAUST: See "Respiratory Protection".MECHANICAL (GENERAL):SPECIAL:OTHER:EYE PROTECTION: See Section IX.PROTECTIVE GLOVES:OTHER PROTECTIVE CLOTHING OR EQUIPMENT:WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

Material Safety Data Sheet

Aluminum Company of America, 1501 Alcoa Building, Pittsburgh, PA 15219



NO. 457H

Common Name	Phone	Date
Dolomite	Emergency: 412-553-4001 Chemtrec: 800-424-9300 Technical: 412-553-4649	Rev 92-03-02 Orig 86-07-23

Prepared by the Hazardous Materials Control Committee.

SECTION I. Material Description

Chemical Name & Formula: Dolomite, $\text{CaCO}_3 \cdot \text{MgCO}_3$; Silicon dioxide, SiO_2

Other Designation: D-313, B-BC2, D-BC10, D-BC10W

CAS No.: Dolomite (16389-88-1); Silicon Dioxide (7631-86-9)

Manufacturer: Northwest Alloys, P.O. Box 115, Addy, WA 99101

Product Use: Chemical processing

SECTION II. Hazardous Ingredients and Occupational Exposure Limits

(>1%)		TWA in mg/m ³	
	<u>Z Typical</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>
CaCO ₃ •MgCO ₃	97-100	Amorphous silica 10	6
SiO ₂ (amorphous)	0-3	Nuisance dust 10	15, 5 (resp.)
H ₂ O	Remainder	ALCOA PEL - total dust: 10 mg/m ³	
LD ₅₀ found for oral route of administration: SiO ₂ (amorphous) 3160 mg/kg, rat			

SECTION III. Physical Data

Physical Form: Solid

Boiling Temperature: Not applicable

Freeze-Melt Temperature: Not determined

Vapor Pressure (mm): Not applicable

Vapor Density (air = 1): Not applicable

Evaporation Rate: Not applicable

Specific Gravity: Not determined

Density: 2.87 g/cc

Water Solubility: Slight

pH: 9.60 [50% weight (gm) to water volume (ml)]

Color: Grayish-white

Odor: None

Odor Threshold: Not applicable

Coefficient of water/oil distribution: Not determined

SECTION IV. Fire and Explosion Data

Flashpoint:	Auto-Ignition Temp.:	Flammability Limits in Air: Upper:	Lower:
None	Not applicable	Not applicable	Not applicable

Product is non-combustible. Not an explosion hazard.

Use fire extinguishing agent suitable for the surrounding fire.

Wear NIOSH approved, self-contained breathing apparatus and protective clothing when appropriate.

SECTION V. Reactivity Data

Material is stable under normal conditions of use, storage and transportation.

SECTION VI. Health Hazard Information (See Section II for exposure limits.)

This product has not undergone testing for either acute or chronic toxic effects. However, based on its chemical composition, we would expect it to be a low health risk by inhalation so long as the occupational exposure limits specified under Section II are met.

MATERIAL SAFETY
DATA SHEET

VALVOLINE, INC.
Subsidiary of Ashland Oil, Inc.
P.O. BOX 14000
LEXINGTON, KENTUCKY 40512
(606) 264-7000

Emergency
Telephone
1 (800) 274-5263 or
1-800-ASHLAND

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SECTION III-PHYSICAL DATA (Continued)

Percent Volatiles

85-100%

Evaporation Rate

SLOWER THAN ETHER

Appearance

CLEAR AMBER

State

LIQUID

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT(TCC) 110.0 - 120.0 Deg F (43.3 - 48.9 Deg C)

EXPLOSIVE LIMIT (LOWEST VALUE OF COMPONENT) LOWER - .7%

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.

SPECIAL FIRE & EXPLOSION HAZARDS: VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR BE MOVED BY VENTILATION AND IGNITED BY HEAT, PILOT LIGHTS, OTHER FLAMES AND IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT.

NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

ALL FIVE GALLON PAILS AND LARGER METAL CONTAINERS INCLUDING TANK CARS AND TANK TRUCKS SHOULD BE GROUNDED AND/OR BONDED WHEN MATERIAL IS TRANSFERRED.

NFPA CODES: HEALTH- 2 FLAMMABILITY- 2 REACTIVITY- 0

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE:

EYES - MAY CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.

SKIN - PROLONGED OR REPEATED CONTACT MAY CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS.

BREATHING - EXCESSIVE INHALATION OF VAPORS MAY CAUSE NASAL AND RESPIRATORY IRRITATION, CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DIZZINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE AND POSSIBLE UNCONSCIOUSNESS AND EVEN ASPHYXIATION.

SWALLOWING - MAY CAUSE GASTROINTESTINAL IRRITATION NAUSEA, VOMITING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS MAY CAUSE CHEMICAL PNEUMONIA WHICH MAY BE FATAL.

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

REMOVE CONTAMINATED SHOES PROMPTLY. DISCARD SHOES SATURATED WITH THIS PRODUCT.

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING. KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION, SKIN CONTACT

EFFECTS OF CHRONIC OVEREXPOSURE:

THIS PRODUCT CONTAINS KEROSENE. MATERIALS SIMILAR TO KEROSENE HAVE BEEN SHOWN TO PRODUCE SKIN CANCER IN LABORATORY ANIMALS FOLLOWING REPEATED SKIN EXPOSURE WITHOUT WASHING OR REMOVAL.

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON VERMICULITE, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.

LARGE SPILL: ELIMINATE ALL IGNITION SOURCES (FLARES, FLAMES INCLUDING PILOT LIGHTS, ELECTRICAL SPARKS). PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE. PREVENT FROM ENTERING DRAINS, SEWERS, STREAMS OR OTHER BODIES OF WATER. PREVENT FROM SPREADING. IF RUNOFF OCCURS, NOTIFY AUTHORITIES AS REQUIRED. PUMP OR VACUUM TRANSFER SPILLED PRODUCT TO CLEAN CONTAINERS FOR RECOVERY. ABSORB UNRECOVERABLE PRODUCT. TRANSFER CONTAMINATED ABSORBENT, SOIL AND OTHER MATERIALS TO CONTAINERS FOR DISPOSAL.

PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURRED.



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SECTION VII-SPILL OR LEAK PROCEDURES (Continued)

WASTE DISPOSAL METHOD:

SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.

LARGE SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE SECTION II), A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS: NEOPRENE, NITRILE RUBBER

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

SECTION X-LABEL INFORMATION

CAUTION!

COMBUSTIBLE LIQUID AND VAPOR

MAY CAUSE EYE AND SKIN IRRITATION.

INHALATION OF VAPOR MAY CAUSE IRRITATION OF NASAL AND RESPIRATORY PASSAGES.

SWALLOWING MAY CAUSE IRRITATION OF MOUTH, ESOPHAGUS, AND GASTROINTESTINAL SYSTEM AND MAY BE FATAL.

HANDLING & STORAGE:

CONTAINER SHOULD BE GROUNDED AND BONDED WHEN TRANSFERRING LIQUID CONTENTS. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME. WEAR CHEMICAL SPLASH GOGGLES, IMPERVIOUS GLOVES AND OTHER NECESSARY PROTECTIVE EQUIPMENT. WASH THOROUGHLY AFTER HANDLING. MAINTAIN AMBIENT AIR CONCENTRATION(S) BELOW PERMISSIBLE EXPOSURE LIMITS. AVOID CONTACT WITH EYES AND PROLONGED OR REPEATED CONTACT WITH SKIN. DO NOT TRANSFER TO UNLABELED CONTAINER. KEEP CONTAINER CLOSED WHEN NOT IN USE. EMPTY CONTAINERS MAY CONTAIN HAZARDOUS PRODUCT RESIDUES. USE OR STORE ONLY WITH ADEQUATE VENTILATION. DO NOT USE CUTTING OR WELDING TORCH ON THIS CONTAINER (EVEN EMPTY). KEEP OUT OF THE REACH OF CHILDREN. FOR INDUSTRIAL USE ONLY. BEFORE USE, REVIEW MATERIAL SAFETY DATA SHEET FOR MORE DETAILED INFORMATION, INCLUDING CHRONIC HEALTH EFFECTS. 24-HOUR EMERGENCY NUMBER 1-800-274-5263

FIRST AID:

EYES: IMMEDIATELY FLUSH WITH WATER FOR AT LEAST 15 MINUTES WHILE LIFTING UPPER AND LOWER EYELIDS. DO NOT USE CHEMICAL ANTIDOTE. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN: WASH THOROUGHLY WITH SOAP AND WATER.

INHALATION: IF AFFECTED, REMOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GET MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VOMITING. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. ASPIRATION HAZARD IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE.

CHRONIC INFORMATION:

CONTAINS MATERIAL(S) WHICH MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. CONTAINS: KEROSENE (8008-20-6), PETROLEUM DISTILLATES, N.O.S. (64742-94-5), 1-BUTANOL (71-36-3) AND CONTENTS PARTIALLY UNKNOWN.

*** COMPONENTS APPEAR IN SECTION II ***

MATERIAL SAFETY
DATA SHEET

VALVOLINE, INC.
Subsidiary of Ashland Oil, Inc.
P.O. BOX 14000
LEXINGTON, KENTUCKY 40512
(606) 264-7000

Emergency
Telephone
1 (800) 274-5263 or
1-800-ASHLAND

002991

INJECT CARE PL

Page: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

Product Name: INJECT CARE PL

NAPA-PORTLAND
PO BOX 3169

08 70 000 0862954-053

Data Sheet No: 0211967-003
Prepared: 03/24/92
Supersedes: 04/23/90

PORTLAND OR 97208

ATTN: PLANT MGR / SAFETY DIR.

PRODUCT: 00006660
INVOICE: 072680
INVOICE DATE: 08/15/91
TO: STATELINE PARTS SUPPLY
STATELINE RD & HWY 139

SECTION I-PRODUCT IDENTIFICATION

General or Generic ID: BLEND

DOT Hazard Classification: COMBUSTIBLE (173.115)

SECTION II-COMPONENTS

THE COMPOSITION OF THIS PRODUCT IS BEING WITHHELD AS A TRADE SECRET.

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORT-
ING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION.
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Note
FUEL ADDITIVE	60-65			(1)
GASOLINE ADDITIVE	1-5			(2)
KEROSENE CAS #: 8008-20-6	10-25			(3)
AROMATIC PETROLEUM DISTILLATES CAS #: 64742-94-5	5-10	100 PPM		(4)
NORMAL BUTANOL CAS #: 71-36-3	1-5	50 PPM - CEILING	50 PPM - CEILING	(5)

Notes:

(1) PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL

MANUFACTURER RECOMMENDS AN EXPOSURE STANDARD OF 80PPM FOR A DAILY 8-HOUR EXPOSURE.

THIS PRODUCT CONTAINS 2.5% ETHYL BENZENE(CAS#100-41-1) AND 12.8% XYLENE(CAS#95-47-6) WHICH APPEAR ON THE SARA SECTION 313 LIST OF TOXIC CHEMICALS.

(2) THIS PROPRIETARY GASOLINE ADDITIVE CONTAINS 7% XYLENE (CAS # 1330-20-7) WITH A PEL/TLV OF 100 PPM AND STEL OF 150 PPM AND 2% ETHYLBENZENE (CAS #100-41-4) WITH A PEL/TLV OF 100 PPM AND STEL OF 125 PPM. THESE CHEMICALS ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III.

(3) NIOSH RECOMMENDS A LIMIT OF 100MG/M3 FOR 10 HR.

THIS PRODUCT CONTAINS THE FOLLOWING WHICH APPEAR ON THE SARA SECTION 313 LIST OF TOXIC CHEMICALS

CHEMICAL	CAS NUMBER	WT. PERCENT
XYLENE MIX	1330-20-7	0.5-1.5
NAPHTHALENE	91-20-3	0.5-1.5

TLV NOT ESTABLISHED FOR THIS MATERIAL.

(4) TLV NOT ESTABLISHED FOR THIS MATERIAL.

THIS MATERIAL MAY CONTAIN 10% NAPHTHALENE, CAS# 91-20-3, WHICH HAS A PEL/TLV OF 10 PPM, STEL OF 15 PPM; AND 2% 1,2,4-TRIMETHYLBENZENE, CAS# 95-63-6, WHICH HAS A PEL/TLV OF 25 PPM. NAPHTHALENE AND 1,2,4-TRIMETHYLBENZENE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III.

(5) SKIN ABSORPTION MAY CONTRIBUTE TO TO THE OVERALL ABSORPTION OF THIS MATERIAL. APPROPRIATE MEASURES SHOULD BE TAKEN TO PREVENT ABSORPTION SO THAT THE TLV IS NOT INVALIDATED.

THIS CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III.

SECTION III-PHYSICAL DATA

Boiling Point	for COMPONENT(10-25%)	(320.00 Deg F 160.00 Deg C) 2 760.00 mm Hg
Vapor Pressure	for COMPONENT(10-25%)	(5.00 mm Hg 77.00 Deg F) 2 25.00 Deg C)
Specific Vapor Density		HEAVIER THAN AIR
Specific Gravity		.870 - .830 2 60.00 Deg F) (15.55 Deg C)



CLEAN ACROSS AMERICA AND
THROUGHOUT THE WORLD™

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

12/15/92

ISSUE DATE: 05/12/92

SUPERSEDES: 05/01/92

ZEPARADE FINISH

PRODUCT NO. - 2014

Floor Finish

ASHGROVE CEMENT
WEST INC
13939 N RIVERGATE
BLVD
PORTLAND, OR 97203

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(404) 435-2973

NON-OFFICE HOURS, WEEKENDS

(404) 351-2952

AND HOLIDAYS, PLEASE CALL YOUR

(404) 432-2873

LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(404) 922-0923

CHEMTREC:

1-800-424-9300

TOLL-FREE - ALL CALLS RECORDED

DISTRICT OF COLUMBIA:

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

@ * 2-(2-ETHOXYETHOXY)-ETHANOL * diethylene glycol monoethyl ether, ethoxydiglycol; CAS# 111-90-0; RTECS#
KK8760000; OSHA PEL N/D
* DIPROPYLENE GLYCOL METHYL ETHER * dipropylene glycol monomethyl ether; CAS# 34590-94-8; RTECS#
JB1575000; OSHA PEL-100 PPM; OSHA/ACGIH STEL-160 PPM

TLV
(PPM)
N/D

EFFECTS
(SEE REVERSE)
CBL IRR

% IN
PROD.
< 5

@ Identifies chemicals listed under SARA-Section 313 for release reporting

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Overexposure by inhalation may cause central nervous system depression characterized by nausea and vomiting.

Chronic Effects of Overexposure:

There are no known effects from chronic exposure to this product. None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

Std PEL/TLV: Not established

Primary Routes of Entry: N/A

HMIS Codes: HEALTH 1;FLAM. 0;REACT. 0;PERS. PROTECT. A;CHRONIC HAZ. NO

FIRST AID PROCEDURES:

Skin: Immediately flush contaminated skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once.

Inhale: Move exposed person to fresh air. If irritation persists, get medical attention promptly.

Ingest: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing: The use of natural rubber, neoprene, or nitrile gloves is recommended if prolonged skin contact is expected.

Eye Protection: Wearing tight-fitting safety glasses is recommended, if splashing may occur.

Respiratory Protection: No extra measures are needed if ventilation is adequate.

Ventilation: Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

Boiling Point (°F): 215 F

Specific Gravity: 1.01

Vapor Pressure (mmHg):

N/D

Percent Volatile by Volume (%): 84%

Vapor Density (air = 1): N/D

Evaporation Rate (WATER = 1):

1.0

Solubility in Water: COMPLETE

pH (concentrate): 8.0-8.5

pH (use dilution of):

N/A

Appearance and Odor: AN OPAQUE, MILKY-WHITE LIQUID WITH A MILD AMMONIA ODOR

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used): NONE ()

Flammable Limits: LEL N/D UEL N/D

Extinguishing Media: Noncombustible.

Special Fire Fighting: Wear self-contained positive pres. Breathing apparatus.

Unusual Fire Hazards: Fire exposed drums should be cooled with stream of water.

SECTION VII - REACTIVITY DATA

Stability: Stable
Incompatibility (avoid): Strong acids, alkalies, and oxidizers.
Polymerization: Will not occur.
Hazardous Decomposition: Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer. Thoroughly rinse spill area with water.

Waste Disposal Method:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps. between 40-120 degrees F. Keep product out of eyes. Clothing or shoes which become contaminated with substance should be removed promptly and not reborn until thoroughly cleaned. Keep out of the reach of children.

SECTION X - TRANSPORTATION DATA

DOT Proper Shipping Name: NONE

DOT Hazard Class: N/A

DOT I.D. Number: N/A

DOT Label/Placard: NONE

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container): : NONE

NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS USED IN THE MSDS:
BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.

CAS #: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).

DESIGNATIONS: Chemical and common names of hazardous ingredients.

EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLVs, and OSHA PELs (TWA, STEL and ceiling limits).

ACGIH: American Conference of Governmental Industrial Hygienists.

CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit - A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure limits.

(S) SKIN: Skin contact with substance can contribute to overall exposure.

STEL: Short Term Exposure Limit - Maximum concentration

for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX: Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this product.

N/D: Not Determined - Insufficient information for a determination for this item.

RTCS #: Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.

SARA: Superfund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated exposure.

TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.

EST'D PEL/TLV: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of vapors.

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)

PERCENT VOLATILE: The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure.

SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition or fire.

INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing excess pressure and heat.

STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act

RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.

TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)



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ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

12/15/92

ISSUE DATE: 05/12/92

SUPERSEDES: 05/01/92

ZEPARADE SEALER

PRODUCT NO.: 2018

Floor Sealer

ASHGROVE CEMENT
WEST INC
13939 N RIVERGATE
BLVD
PORTLAND, OR 97203

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

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CHEMTREC:

1-800-424-9300

TOLL-FREE - ALL CALLS RECORDED

DISTRICT OF COLUMBIA:

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

@ ** DIETHYLENE GLYCOL MONOMETHYL ETHER ** 2-(2-methoxy)-ethanol; methyl carbitol; CAS# 111-77-3; RTECS#

KL6125000

TLV
(PPM)
N/D

EFFECTS
(SEE REVERSE)
EIR CBL

% IN
PROD.
< 5

@ ** DIETHYLENE GLYCOL MONOBUTYL ETHER ** 2-(2-butoxyethoxy)-ethanol; butyl carbitol; CAS# 112-34-5; RTECS#

KJ9100000; OSHA PEL-N/D

N/D

EIR

< 5

@ Identifies chemicals listed under SARA-Section 313 for release reporting

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product can be an eye irritant. Inflammation of eye tissue is characterized by redness, watering, and/or itching.

Chronic Effects of Overexposure:

There are no known effects from chronic exposure to this product. None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

st'd PEL/TLV: Not established

Primary Routes of Entry: Inh.

HMS Codes: HEALTH 1; FLAM. 0; REACT. 0; PERS. PROTECT. A; CHRONIC HAZ. NO

FIRST AID PROCEDURES:

Skin: Immediately flush contaminated skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once.

Inhale: Move exposed person to fresh air. If irritation persists, get medical attention promptly.

Ingest: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing: The use of natural rubber, neoprene, or nitrile gloves is recommended if prolonged skin contact is expected.

Eye Protection: Wearing tight-fitting safety glasses is recommended, if splashing may occur.

Respiratory Protection: No extra measures are needed if ventilation is adequate.

Ventilation: Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

Boiling Point (°F): 212F

Specific Gravity: 1.02

Vapor Pressure (mmHg): N/D

Percent Volatile by Volume (%): 80%

Vapor Density (air = 1): < 1

Evaporation Rate (WATER = 1): < 1

Solubility in Water: DILUTABLE

pH (concentrate): 8.0

pH (use dilution of): N/D

Appearance and Odor: MILKY-WHITE OPAQUE LIQUID

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used): > 200F (TCC)

Flammable Limits: LEL N/D UEL N/D

Extinguishing Media: Noncombustible.

Special Fire Fighting: Wear self-contained positive pres. Breathing apparatus.

Unusual Fire Hazards: Fire exposed drums should be cooled with stream of water.

SECTION VII - REACTIVITY DATA

Stability:	Stable
Incompatibility (avoid):	Strong acids, alkalis, and oxidizers.
Polymerization:	Will not occur.
Hazardous Decomposition:	Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer. Thoroughly rinse spill area with water.

Waste Disposal Method:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg. Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps. between 40-120 degrees F. Keep product away from skin and eyes. Store away from alkalis, acids, and oxidizers. Clothing or shoes which become contaminated with substance should be removed promptly and not reborn until thoroughly cleaned. Keep out of the reach of children.

SECTION X - TRANSPORTATION DATA

DOT Proper Shipping Name: NONE

DOT Hazard Class: N/A

DOT I.D. Number: N/A

DOT Label/Picard: NONE

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container): : NONE

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CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).

DESIGNATIONS: Chemical and common names of hazardous ingredients.

EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling limits).

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CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration.

PEL: Permissible Exposure Limit - A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure limits.

(S) SKIN: Skin contact with substance can contribute to overall exposure.

STEL: Short Term Exposure Limit - Maximum concentration

for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBI: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX: Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 5 teaspoons (2 tablespoons).

IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this product.

NID: Not Determined - Insufficient information for a determination for this item.

RTECS #: Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.

SARA: Superfund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated exposure.

TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.

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HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

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ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of vapors.

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: It refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)

PERCENT VOLATILE: The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure.

SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition or fire.

INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing excess pressure and heat.

STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act

RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.

TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)

REACTIVITY DATA

STABILITY Inert	UNSTABLE		CONDITIONS TO AVOID None
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) None			
HAZARDOUS DECOMPOSITION PRODUCTS None			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID None
	WILL NOT OCCUR	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 Avoid contact of skin with liquid nitrogen or its cold boil-off gas. Flush liquid nitrogen spill with water to disperse. Ventilate enclosed areas to prevent formation of oxygen-deficient atmospheres caused by the evaporation of liquid nitrogen or the release of gaseous nitrogen.

WASTE DISPOSAL METHOD
 Allow liquid nitrogen to evaporate in a well ventilated outdoor location remote from work areas. Vent nitrogen gas slowly to a well ventilated outdoor location remote from work areas. Do not attempt to dispose of residual nitrogen in compressed gas cylinders. Return cylinders to Air Products with residual pressure, the cylinder valve tightly closed and valve caps in place.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type):
 Use self-contained breathing apparatus in oxygen-deficient atmospheres. Caution! Respirators will not function. Use may result in asphyxiation.

VENTILATION Natural or mechanical where gas is present.	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER Vents should be situated to avoid higher than normal concentration of nitrogen in work areas.

PROTECTIVE GLOVES
 (LIN) Loose-fitting gloves of impermeable materials such as leather. Leather work gloves are recommended when handling compressed gas cylinders.

EYE PROTECTION
 (LIN) Chemical goggles or safety glasses. Safety glasses are recommended when handling high-pressure cylinders.

OTHER PROTECTIVE EQUIPMENT
 None

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION
 Nitrogen shipments must be in accordance with Department of Transportation (DOT) regulations using DOT "NON-FLAMMABLE GAS" label. Consult DOT regulations for details on the shipping of hazardous materials.

SPECIAL HANDLING RECOMMENDATIONS
 Prevent contact of liquid nitrogen or cold boil-off gas with exposed skin. Prevent entrapment of liquid in closed systems. Use only in well ventilated areas. Compressed gas cylinders contain nitrogen at extremely high pressure and should be handled with care. Use a pressure-reducing regulator and pressure relief devices when connecting to lower pressure piping systems. Secure cylinders when in use. Never use direct flame to heat a compressed gas cylinder. Use a check valve to prevent back flow into storage container. Avoid dragging, rolling, or sliding cylinders, even for a short distance. Use a suitable hand truck. For additional handling recommendations on compressed gas cylinders, consult Compressed Gas Association Pamphlet P-1.

SPECIAL STORAGE RECOMMENDATIONS
 Store liquid containers and cylinders in well ventilated areas. Keep cylinders away from sources of heat. Storage should not be in heavy traffic areas to prevent accidental knocking over or damage from passing or falling objects. Valve caps should remain on cylinders not connected for use. Segregate full and empty cylinders. Storage areas should be free of combustible material. Replace the cylinder cap when the cylinder is not in use. Avoid exposure to areas where salt or other corrosive chemicals are present. See Compressed Gas Association Pamphlet P-1 for additional storage recommendations.

SPECIAL PACKAGING RECOMMENDATIONS
 Gaseous nitrogen containers meet DOT specifications or American Society of Mechanical Engineers (ASME) codes. Liquid nitrogen is stored in vacuum-insulated containers meeting DOT specifications or ASME codes.

OTHER RECOMMENDATIONS OR PRECAUTIONS
 Liquid nitrogen is a cryogenic liquid. Materials of construction must be selected for compatibility with extremely low temperatures. Avoid use of carbon steel and other materials which become brittle at low temperatures. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder filled without the permission of the owner is a violation of Federal Law. If oxygen-deficient atmospheres are suspected or can occur, use oxygen monitoring equipment to test for oxygen deficient atmospheres.

*Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.



Emergency Number (800)457-2022 or (510)233-3737

Material Safety Data Sheet

CHEVRON DELO 100 Motor Oil SAE 40

CPS222404

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3746534
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
BULK LUBE OIL PICK-UP WB
FOB WILLERIDGE
PORTLAND, OR 97210

Print Date: May 20, 1992

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Minor change for indexing purposes only.

1. PRODUCT IDENTIFICATION

CHEVRON DELO 100 Motor Oil SAE 40

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER
OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS222404
PRODUCT INFORMATION: (800)582-3835

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 13

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NDA - No Data Available

NA - Not Applicable

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

5. FIRE PROTECTION

FLASH POINT: (COC) 446F (230C) Min.

AUTOIGNITION: NDA

FLAMMABILITY: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

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NDA - No Data Available

NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark Amber liquid.

BOILING POINT: NDA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.89 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 14.3 cSt @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills. Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

Based upon information reviewed to date, this product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5mg/m3, the OSHA PEL is 5mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 %	CHEVRON DELO 100 Motor Oil SAE 40
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Revision Number: 13

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NDA - No Data Available

NA - Not Applicable

CONTAINING

> 90.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 10.0 % ADDITIVES INCLUDING THE FOLLOWING

< 1.5 % BUTYL BENZYL PHTHALATE
CAS85687 A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
CERCLA 302.4 RQ=100 POUNDS

< 1.5 % ZINC ALKYL DITHIOPHOSPHATE
CAS68649423 A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

TLV - Threshold Limit Value	PEL - Permissible Exposure Limit
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1.	Immediate (Acute) Health Effects; NO
2.	Delayed (Chronic) Health Effects; NO
3.	Fire Hazard; NO
4.	Sudden Release of Pressure Hazard; NO
5.	Reactivity Hazard; NO

WHEN A COMPONENT OF THIS MATERIAL IS SHOWN IN THIS SECTION, THE
REGULATORY LIST ON WHICH IT APPEARS IS INDICATED.

ZINC ALKYL DITHIOPHOSPHATE	01,10,11,
BUTYL BENZYL PHTHALATE	01,10,24,26,28,

REGULATORY LISTS:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4

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13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA PEL	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA SECT 4
22=TSCA SECT 5 SNUR	23=TSCA SECT 6 RULE	24=TSCA SECT 12 EXPORT
25=TSCA SECT 8A CAIR	26=TSCA SECT 8D REPORT	27=TSCA SECT 8E
28=Canadian WHMIS		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

NDA. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

NDA. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

NDA. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

NDA. The hazard evaluation was based on data from similar materials.

INGESTION:

NDA. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils require a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

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NDA - No Data Available	NA - Not Applicable	

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260
NDA - No Data Available NA - Not Applicable

MATERIAL SAFETY DATA SHEET

RMAC INTERNATIONAL, INC.

SECTION I. PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

RMAC INTERNATIONAL, INC.
3601 N. Marine Dr.
Troutdale, OR 97060

Preparation Date: June 17, 1992
Last Revision: N/A
Information Phone Number: (503) 665 3570
Emergency Phone Number: (206) 576 0120

Product Name: Tire Oil

Common Name: N/A

Chemical Name: Pyrolysis Condensate Formula: N/A

SECTION II COMPOSITION

<u>Composition</u>	<u>CAS No.</u>	<u>Exposure Limit</u>	<u>Range %</u>
Middle Distillates	N.A.	None Established	95%-100%

Product may contain the following carcinogenic (as determined by the respective agencies) components in excess of 0.1%:

<u>Component</u>	<u>CAS No.</u>	<u>Agency</u>	<u>Exposure Limit</u>
Benzene	71-43-2	OSHA	1 ppm
		ACGIH	10 ppm
Naphthalene	91-20-3	OSHA	10 ppm
		ACGIH	10 ppm
Ethenylbenzene	100-42-5	ACGIH	50 ppm
		IARC	

Product is hazardous according to OSHA (1910.1200).

SECTION III PHYSICAL DATA

Boiling Point.....ND	Gravity, API.....17.3
Vapor Pressure.....ND	Solubility in Water...NA
Vapor Density.....ND	Melting Point.....NA
Reactivity in Water...Non-	pH.....NA
Reactive	Physical State.....Liquid

MATERIAL SAFETY DATA SHEET

RMAC INTERNATIONAL, INC.

SECTION IV FIRE & EXPLOSION DATA

Flash Point: 140 F (PMCC) Auto-Ignition Temp.: ND

Flammable Limits In

Air, Vol %: LEL: ND UEL: ND

Extinguisher Media: Water fog, foam, carbon dioxide or dry chemical.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus with full face piece operated in the positive pressure demand mode when fighting fires.

Unusual Fire & Explosion Hazards: Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup which could result in container rupture.

Toxic Gases Produced: Carbon monoxide and unidentified organic compounds may be formed during combustion.

SECTION V REACTIVITY DATA

Stability: Stable Hazardous Polymerization: Will not occur

Conditions to Avoid: Heat and flame.

Incompatibles: Strong oxidizing agents.

SECTION VI HEALTH EFFECTS

Acute Symptoms of Exposure: Liquid is mildly irritating to the skin. Prolonged or repeated liquid contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis. High vapor concentrations may be irritating to the nose, throat and respiratory tract and may cause CNS depression. Ingestion of product may result in vomiting. Aspiration of vomitus and product into the lungs may result in aspiration and chemical pneumonitis. Symptoms of CNS depression include headache, dizziness, nausea and unconsciousness. In extreme cases death may result.

Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory diseases may be aggravated by exposure to this product.

Normal Routes of Entry: Inhalation, skin and eye contact.

MATERIAL SAFETY DATA SHEET

PMAC INTERNATIONAL, INC.

SECTION VI HEALTH EFFECTS (continued)

Carcinogenicity: Ethenylbenzene, naphthalene, benzene. See SECTION II.

Chronic Effects: Repeated skin contact may cause persistent irritation or dermatitis. This product contains ethenylbenzene, naphthalene and benzene. Prolonged and repeated exposure to one or more of these components has been associated with anemia and leukemia in humans and animals.

SECTION VII FIRST AID

Eyes: Flush with copious amounts of water for 15 minutes while holding eye-lids open. Get medical attention.

Skin: Thoroughly wash exposed area with soap and water. Remove contaminated clothing. If irritation occurs, get medical attention. Launder contaminated clothing before re-use.

Inhalation: Remove affected individual to fresh air and provide oxygen if breathing is difficult. Apply artificial respiration if victim is not breathing. Get medical attention.

Ingestion: Do not induce vomiting. Keep victim warm, quiet and get medical attention. If vomiting occurs, keep head below hips to prevent aspiration of fluid into lungs.

SECTION VIII SPECIAL PRECAUTIONS AND ACCIDENTAL RELEASE MEASURES

Handling and Storage: Combustible liquid. For large spills eliminate all potential ignition sources. Wear appropriate respirator and protective clothing. Dam and dike spill to prevent spread. Pump liquid into salvage tank. Soak up remaining liquid with an absorbant such as sand, clay, earth or other absorbant material.

Small spills may be absorbed with paper, vermiculite or other absorbant and transferred to a hood or a suitable container for proper disposal.

Accidental Release: Under EPA-CERCLA (Superfund), releases to the air, land or water which exceed the reportable quantity must be reported to the National Response Center, 800-424-8802. This product contains a component designated as a hazardous substance under Section 311 of EPA-CWA. Spills leading into or leading to waters that coause a sheen must be reported to the National Response Center, 800-424-8802.

Waste Disposal: As a hazardous waste this product is considered an ignitable hazardous waste according to EPA-RCRA(40 CFR 261.21). Refer to latest EPA or state regulations regarding proper disposal.

MATERIAL SAFETY DATA SHEET

RHAC INTERNATIONAL, INC.

SECTION VIII (continued)

Special Precautions: Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and other sources of ignition prior to use and until all vapors are gone. Vapors may travel to remote ignition sources and result in flash fires. Empty containers may contain explosive vapors. Do not cut, weld, drill or grind on or near containers. Ground fixed equipment and transfer containers to prevent accumulation of static electricity.

SECTION IX CONTROL MEASURES

Respiratory: Avoid prolonged or repeated exposure to vapors. If exposure exceeds occupational exposure limits (Section II), use a NIOSH-approved respirator to prevent overexposure. Use an air-supplying respirator or an air-purifying respirator for organic vapors according to 29 CFR 1910.134.

Protective Clothing: Wear safety glasses or goggles. Avoid repeated contact with skin. Chemical resistant gloves are recommended.

Other Protective Measures: Use explosion-proof ventilation as required to control vapor concentrations. Air-dry contaminated clothing in a well ventilated area. Launder before using.

DATA SHEET MEET THE REQUIREMENTS OF THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ACT AND CFR 1910.1200, AND ARE BELIEVED TO BE ACCURATE AND COMPILED FROM SOURCES BELIEVED TO BE RELIABLE. RHAC INTERNATIONAL, INC. MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE ACCURACY OR COMPLETENESS OF THE INFORMATION AND DATA HEREIN. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.



Emergency Number (800)457-2022 or (510)233-3737

Material Safety Data Sheet

CHEVRON Unleaded Gasoline

CPS201110

Page 1 of 11

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting

PRIESTLEY OIL & CHEMICAL 4070132
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
TERM P/U MOGAS/MID-DIST
WILLERIDGE TERM
PORTLAND, OR 97210

Print Date: July 24, 1992

1. PRODUCT IDENTIFICATION

CHEVRON Unleaded Gasoline

DANGER:

- HARMFUL OR FATAL IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE
- VAPOR HARMFUL
- LONG-TERM EXPOSURE TO VAPOR HAS CAUSED CANCER IN LABORATORY ANIMALS
- MAY CAUSE EYE AND SKIN IRRITATION
- EXTREMELY FLAMMABLE
- KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS201110
PRODUCT INFORMATION: (510)242-5357

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

If respiratory irritation or any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital. Note to Physician: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision. Eye contact with the vapors, fumes, or spray mist from this substance could also cause similar signs and symptoms.

SKIN IRRITATION:

Prolonged or frequently repeated contact may cause the skin to become cracked or dry from the defatting action of this material.

DERMAL TOXICITY:

If absorbed through the skin, this substance is considered practically non-toxic to internal organs.

RESPIRATORY/INHALATION:

This substance is slightly toxic to internal organs if inhaled. The degree of injury will depend on the airborne concentration and duration of exposure. The target organ(s) is the nervous system. Inhalation of gasoline vapor at airborne concentrations exceeding 1000 ppm may cause signs and symptoms of central nervous system effects such as headache, dizziness, loss of appetite, weakness and loss of coordination. Vapor concentrations in excess of 5000 ppm may cause loss of consciousness, coma and death. Brief exposures to high vapor concentrations may also cause pulmonary edema and bronchitis. Intentional exposures to excessively high

Revision Number: 15**Revision Date: 01/23/92****MSDS Number: 000372****NDA - No Data Available****NA - Not Applicable**

concentrations (e.g., when used as a drug of abuse) have been reported to result in clinical manifestations that may include convulsions, delirium, and hallucinations. These manifestations are not known to occur following accidental inhalation of gasoline vapor during normal operations.

INGESTION:

This substance is slightly toxic to internal organs if swallowed. The degree of injury will depend on the amount absorbed from the gut. The target organ(s) is the nervous system. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required. Refer to the OSHA Benzene Standard to determine what type of respirator is required based on exposure levels.

VENTILATION:

Use this material only in well ventilated areas.

5. FIRE PROTECTION

FLASH POINT: (P-M) < -49F (-45C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: 1.4 Upper: 7.6

EXTINGUISHING MEDIA:

Fire Fighting Foam: Alcohol Resistant Type (AR)

AFFF, CO2, Dry Chemical.

NFPA RATINGS: Health 1; Flammability 3; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

Revision Number: 15

Revision Date: 01/23/92

MSDS Number: 000372

NDA - No Data Available

NA - Not Applicable

FIRE FIGHTING PROCEDURES:

This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches.

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire document.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

Never siphon gasoline by mouth. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other such use. DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed. DO NOT TRANSFER LIQUID TO AN UNLABELED CONTAINER. DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbons; insoluble in water.

APPEARANCE: Orange to bronze liquid.

BOILING POINT: 25 - 225C (Variable)

MELTING POINT: NA

EVAPORATION: NDA

SPECIFIC GRAVITY: 0.7 - 0.8

VAPOR PRESSURE: 5 - 15 PSI (max.) @ 100F (Variable)

PERCENT VOLATILE (VOLUME %): 99+%

VAPOR DENSITY (AIR=1): 3-4

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MSDS Number: 000372

NDA - No Data Available

NA - Not Applicable

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

Eliminate all sources of ignition in vicinity of spill or released vapor.

Clean up spills immediately, observing precautions in Protective Equipment section. This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems.

U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-8802.

DISPOSAL METHODS:

Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

SPECIAL NOTES: Ethyl Alcohol is only added in limited specific distribution areas.

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Unleaded Gasoline

CONTAINING

100.0 % GASOLINE (GENERIC)
300ppm ACGIH TLV
500ppm ACGIH STEL
300ppm OSHA TWA
500ppm OSHA STEL

INCLUDING

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NDA - No Data Available NA - Not Applicable

< 4.9 % BENZENE
CAS71432 A toxic chemical subject to the reporting requirements of
Section 313 of Title III of the Superfund Amendments and
Reauthorization Act of 1986 and 40 CFR Part 372.
10ppm ACGIH TLV
1ppm OSHA TWA
5ppm OSHA STEL
25 ppm OSHA CEILING
CERCLA 302.4 RQ=10 POUNDS

Refer to the OSHA Benzene Standard (29 CFR 1910.1028) for detailed
training, exposure monitoring, respiratory protection and medical
surveillance requirements before using this product.

< 1.4 % ETHYLBENZENE
CAS100414 A toxic chemical subject to the reporting requirements of
Section 313 of Title III of the Superfund Amendments and
Reauthorization Act of 1986 and 40 CFR Part 372.
100ppm ACGIH TLV
125ppm ACGIH STEL
100ppm OSHA TWA
125ppm OSHA STEL
CERCLA 302.4 RQ=1000 POUNDS

< 0.9 % XYLENE-P
CAS106423 A toxic chemical subject to the reporting requirements of
Section 313 of Title III of the Superfund Amendments and
Reauthorization Act of 1986 and 40 CFR Part 372.
150 ppm ACGIH STEL
CERCLA 302.4 RQ=1000 POUNDS

< 4.6 % XYLENE-M
CAS108383 A toxic chemical subject to the reporting requirements of
Section 313 of Title III of the Superfund Amendments and
Reauthorization Act of 1986 and 40 CFR Part 372.
100ppm ACGIH TLV
150ppm ACGIH STEL
100ppm OSHA TWA
150ppm OSHA STEL
CERCLA 302.4 RQ=1000 POUNDS

< 2.2 % XYLENE-O
CAS95476 A toxic chemical subject to the reporting requirements of
Section 313 of Title III of the Superfund Amendments and
Reauthorization Act of 1986 and 40 CFR Part 372.
100ppm ACGIH TLV
150ppm ACGIH STEL
100ppm OSHA TWA
150ppm OSHA STEL
CERCLA 302.4 RQ=1000 POUNDS

< 6.5 % TOLUENE
CAS108883 A toxic chemical subject to the reporting requirements of

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NDA - No Data Available NA - Not Applicable

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

100ppm ACGIH TLV
150ppm ACGIH STEL
100ppm OSHA TWA
150ppm OSHA STEL
300 ppm OSHA CEILING
CERCLA 302.4 RQ=1000 POUNDS

< 3.0 %
CAS110543
HEXANE
50ppm ACGIH TLV
1000 ppm ACGIH STEL
50ppm OSHA TWA

< 2.4 %
CAS110827
CYCLOHEXANE
A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
300ppm ACGIH TLV
300ppm OSHA TWA
CERCLA 302.4 RQ=1000 POUNDS

CAN CONTAIN

< 15.0 %
CAS1634044
METHYL TERT BUTYL ETHER
A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

OR

< 10.0 %
CAS64175
ETHYL ALCOHOL
1,000ppm ACGIH TLV
1000ppm OSHA TWA

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT basic descriptions can vary based on package quantity and may not coincide with international description requirements. Consult the Hazardous Materials Regulations in 49CFR and the appropriate Dangerous Goods Regulations to confirm description applicability to specific shipments.

DOT SHIPPING NAME: GASOLINE
DOT HAZARD CLASS: FLAMMABLE LIQUID
DOT IDENTIFICATION NUMBER: UN1203

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NDA - No Data Available NA - Not Applicable

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; YES
2. Delayed (Chronic) Health Effects; YES
3. Fire Hazard; YES
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

ETHYLBENZENE

is found on lists: 01,02,10,11,12,13,14,15,17,18,26,28,

XYLENE-P

is found on lists: 01,02,10,11,12,15,26,28,

XYLENE-M

is found on lists: 01,02,10,11,12,14,15,17,18,26,28,

TOLUENE

is found on lists: 01,02,04,10,11,12,13,14,15,17,18,26,28,29,

HEXANE

is found on lists: 02,10,11,13,14,15,17,28,

CYCLOHEXANE

is found on lists: 01,02,10,11,12,13,14,17,26,28,

METHYL TERT BUTYL ETHER

is found on lists: 01,10,11,21,24,26,

ETHYL ALCOHOL

is found on lists: 02,04,10,11,13,14,17,28,

BENZENE

is found on lists: 01,02,03,04,06,10,11,12,13,14,17,18,20,28,29,

XYLENE-O

is found on lists: 01,02,10,11,12,14,15,17,18,26,28,

GASOLINE (GENERIC)

is found on lists: 04,08,14,15,17,18,20,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

The Draize Eye Irritation Score (range, 0-110) in rabbits is 0.

SKIN IRRITATION:

The Draize Skin Primary Irritation Score (range, 0-8) for a 4-hour exposure (rabbits) is 0.98. This material was not a skin sensitizer in

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the modified Buehler Guinea Pig Sensitization Test.

DERMAL TOXICITY:

The dermal LD50 in rabbits is > 5 ml/kg.

RESPIRATORY/INHALATION:

No product toxicology data available.

INGESTION:

The oral LD50 in rats is > 5 ml/kg.

ADDITIONAL TOXICOLOGY DATA:

Lifetime inhalation of whole gasoline vapor has caused increased liver tumors in female mice. The mechanism of this response is still being investigated but it is thought to be an epigenetic process unique to the female mouse. Inhalation exposure to whole gasoline vapor also caused kidney damage and eventually kidney cancer in male rats. No other animal model studied has shown these adverse kidney effects and there is no physiological reason to believe that they would occur in man.

The data above is obtained from studies sponsored by the American Petroleum Institute (API).

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains benzene. The OSHA Benzene Standard (29 CFR 1910.1028) contains detailed requirements for training, exposure monitoring, respiratory protection and medical surveillance triggered by the exposure level. Refer to the OSHA Standard before using this product. Repeated or prolonged breathing of benzene vapors has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother. However, some evidence of fetal toxicity such as delayed physical development has been seen at such levels. The available information on the effects of benzene on human pregnancies is inadequate but it has been established that benzene can cross the human placenta.

This product contains n-hexane. Prolonged or repeated skin contact or breathing of vapors may cause nerve damage characterized by progressive weakness and numbness in the arms and legs. Recovery ranges from no recovery to complete recovery depending upon the severity of the nerve damage.

This product contains toluene. Toluene has been reported to decrease immunological responses in test animals. It has also been reported that when young rats were exposed to 1000 ppm toluene for 14 hours daily, for two weeks, irreversible hearing loss was detected. The same daily exposure to 700 ppm for as long as 16 weeks was without effect. Since the level necessary to produce hearing loss is greater than 7 times the ACGIH TLV-TWA for toluene, worker exposures at or below 100 ppm is not expected to cause any adverse effects. There are also reports that chronic solvent abusers (glue sniffers, solvent huffers) who deliberately inhale high concentrations (several thousand ppm) of toluene for prolonged periods (up

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to ten hours/day) have suffered liver, kidney and brain damage. Toluene may also cause mental and/or growth retardation in the children of female solvent abusers who directly inhale toluene when they are pregnant. Toluene caused growth retardation in rats when administered at doses that were toxic to the mothers (1500 ppm). Concentrations of up to 5000 ppm did not cause birth defects. There were no effects in the offspring at doses that did not intoxicate the pregnant rats. The exposure level at which no effects were seen (No Observed Effect Level, NOEL) is 750 ppm. We recommend that the precautions outlined in this MSDS be followed to keep toluene concentrations below the recommended exposure standards.

This product contains xylene, a chemical that has been reported to cause developmental toxicity in rats and mice exposed by inhalation during pregnancy. The effects noted consisted of delayed development and minor skeletal variations; additionally, when pregnant mice were exposed by ingestion to a level that killed nearly one-third of the test group, lethality (resorptions) and malformations (primarily cleft palate) occurred. Malformations have not been reported following inhalation exposure. Because of the very high levels of exposure used in these studies, we do not believe that their results imply an increased risk of reproductive toxicity to workers exposed to xylene levels at or below the exposure standard.

Xylene has given negative results in several mutagen testing assays including the Ames assay. In a cancer study sponsored by the National Toxicology Program (NTP), technical grade xylene gave no evidence of carcinogenicity in rats or mice dosed daily for two years.

This product can contain methyl tert butyl ether (MTBE). Most mutagenicity data on MTBE, except for the in vitro mouse lymphoma test, indicate that it is not mutagenic. MTBE caused birth defects in mice exposed to 8,000 ppm throughout pregnancy. No birth defects were observed in mice at 1,000 ppm or in rats or rabbits at any dose of MTBE. These results suggest that the risk of birth defects in humans from MTBE is negligible at the anticipated exposure concentrations.

Whole gasoline exhaust was reviewed by the International Agency for Research on Cancer (IARC) in their Monograph Volume 46 (1989). Evidence for causing cancer was considered inadequate in animals and inadequate in humans. IARC placed whole gasoline exhaust in Category 2B, considering it possibly carcinogenic to humans.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination

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NDA - No Data Available NA - Not Applicable

of the suitability of the material for his particular purpose.

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NDA - No Data Available NA - Not Applicable

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
3747 N. SUTTLE RD.
PORTLAND, OR. 97217
(503)286-1673

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PRODUCT CODE NO. : NONE

MANUFACTURER:

MORRISON OIL COMPANY, INC.
3747 N. SUTTLE RD.
P. O. BOX 17339
PORTLAND, OREGON 97217

CONTACT FOR FURTHER INFORMATION:
CALL (503) 286-1673

TRANSPORTATION EMERGENCIES:

CALL CHEMTREC
(800) 424-9300
CONTINENTAL U.S.

PRODUCT IDENTIFICATION

PRODUCT NAME : DUREX AFM PROPYLENE GLYCOL ANTI-FREEZE
SYNONYMS : PG ANTI-FREEZE
GENERIC NAME : HD DIESEL ANTI-FREEZE
CHEMICAL FAMILY : GLYCOLS
DOT PROPER
SHIPPING NAME : N/A
ID NUMBER : NONE

SECTION I - INGREDIENTS (% w/w, unless otherwise noted)

PROPYLENE GLYCOL	CAS#000057-55-6	90-95%
SODIUM HYDROXIDE	CAS#1310-73-2	0-2%
BENZOIC ACID	CAS#65-85-0	2-4%
INORGANIC/ORGANIC SALTS		2-4%
WATER		2-4%

THIS DOCUMENT IS PREPARED PURSUANT TO THE OSHA HAZARD COMMUNICATION STANDARD (20 CFR 1910.1200). IN ADDITION, OTHER SUBSTANCES NOT 'HAZARDOUS' PER THIS OSHA STANDARD MAY BE LISTED. WHERE PROPRIETARY INGREDIENT SHOWS, THE IDENTITY MAY BE MADE AVAILABLE AS PROVIDED IN THIS STANDARD.

MATERIAL SAFETY DATA SHEET

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SECTION II - EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:

IRRIGATE IMMEDIATELY WITH WATER FOR AT LEAST 5 MINUTES. GET MEDICAL ATTENTION IF ANY IRRITATION PERSIST.

SKIN CONTACT:

WASH OFF IN FLOWING WATER OR SHOWER. NOT EXPECTED TO PRESENT A SIGNIFICANT SKIN HAZARD UNDER ANTICIPATED CONDITIONS OF NORMAL USE.

INHALATION (BREATHING):

REMOVE TO FRESH AIR IF EFFECTS OCCUR. CONSULT MEDICAL.

INGESTION (SWALLOWING):

INDUCE VOMITING IF LARGE AMOUNTS ARE INGESTED. CONSULT MEDICAL. NOT EXPECTED TO PRESENT A SIGNIFICANT INGESTION HAZARD UNDER ANTICIPATED CONDITIONS OF NORMAL USE.

NOTE TO PHYSICIAN:

NO SPECIFIC ANTIDOTE. SUPPORTIVE CARE. TREATMENT BASED ON JUDGMENT OF THE PHYSICIAN IN RESPONSE TO REACTIONS OF THE PATIENT.

MATERIAL SAFETY DATA SHEET

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SECTION III - POTENTIAL ADVERSE HEALTH EFFECTS

EYE CONTACT:

MAY CAUSE MINOR EYE IRRITATION.

SKIN ABSORPTION:

NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY HEALTH HAZARD ARE EXPECTED TO OCCUR AS A RESULT OF SKIN ABSORPTION EXPOSURE.

SKIN IRRITATION:

NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY ADVERSE HEALTH HAZARD ARE EXPECTED TO OCCUR AS A RESULT OF SKIN EXPOSURE.

INHALATION (BREATHING):

A SINGLE PROLONGED (HOURS) INHALATION EXPOSURE IS NOT LIKELY TO CAUSE ADVERSE EFFECTS. MISTS ARE NOT LIKELY TO BE HAZARDOUS.

INGESTION (SWALLOWING):

SINGLE DOSE ORAL TOXICITY IS LOW. THE LD50 FOR FEMALE RATS IS ABOUT 20.3 G/KG. NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY ADVERSE HEALTH HAZARD ARE EXPECTED TO OCCUR AS A RESULT OF INGESTION.

SYSTEMIC & OTHER EFFECTS:

REPEATED EXCESSIVE INGESTION MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS. NO CARCINOGENIC EFFECTS HAVE BEEN SEEN IN LONG-TERM ANIMAL STUDIES. BIRTH DEFECTS ARE UNLIKELY. EXPOSURES HAVING NO ADVERSE EFFECTS ON THE MOTHER SHOULD HAVE NO EFFECT ON THE FETUS. IN ANIMAL STUDIES, HAS BEEN SHOWN NOT TO INTERFERE WITH REPRODUCTION. RESULTS OF MUTAGENICITY TESTS IN VITRO (TEST TUBE) AND IN ANIMALS HAVE BEEN NEGATIVE. NO CHRONIC HEALTH EFFECTS ARE EXPECTED FROM NORMAL USE.

MATERIAL SAFETY DATA SHEET

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SECTION IV - SPECIAL PROTECTION INFORMATION

VENTILATION:

GOOD GENERAL VENTILATION SUFFICIENT.

RESPIRATORY PROTECTION:

NO RESPIRATORY PROTECTION SHOULD BE NEEDED.

SKIN PROTECTION:

NO PRECAUTIONS OTHER THAN CLEAN BODY-COVERING SHOULD BE NEEDED.

EYE PROTECTION:

USE SAFETY GLASSES.

EXPOSURE GUIDELINE(S):

10 MG/M3 FOR PROPYLENE GLYCOL MIST. 400 PPM FOR PROPYLENE GLYCOL VAPORS.
PROPYLENE GLYCOL: AIHA WEEL IS 50 PPM TOTAL, 10 MG/M3 AEROSOL ONLY.

SECTION V - REACTIVITY DATA

STABILITY (CONDITIONS TO AVOID):

STABLE OVER NORMAL OPERATING TEMPERATURE RANGE OF -30F TO 250F.

INCOMPATIBILITY (MATERIALS TO AVOID):

OXIDIZING MATERIALS

HAZARDOUS DECOMPOSITION PRODUCTS:

NONE.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR.

MATERIAL SAFETY DATA SHEET

MORRISON OIL MSDS #MOAFM

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SECTION VI - SPILL OR LEAK PROCEDURES

****HIGHWAY OR RAILWAY SPILLS****
CALL CHEMTREC 800-424-9300 CONT. U.S.

ACTION TO TAKE FOR SPILLS/LEAKS:

COVER WITH ABSORBENT MATERIAL, SOAK UP AND SWEEP INTO BAG.

WASTE DISPOSAL METHOD:

INCINERATE OR BURY AWAY FROM WATER SUPPLIES IN ACCORDANCE WITH LOCAL REGULATIONS.

SECTION VII - STORAGE AND SPECIAL PRECAUTIONS

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

EXERCISE REASONABLE CARE AND CAUTION.

SECTION VIII - FIRE AND EXPLOSION HAZARD DATA

NFPA HAZARD CLASS	HEALTH HAZARD FLAMMABILITY REACTIVITY OTHER	HAZARD RANKING 0 = LEAST 1 = SLIGHT 2 = MODERATE 3 = HIGH 4 = EXTREME	DOT FLAMMABILITY CLASSIFICATION N/A	FLASH POINT 235°F, 113°C (TCC)

EXTINGUISHING MEDIA:

WATER FOG, ALCOHOL RESISTANT, DRY CHEMICAL.

FIRE & EXPLOSION HAZARDS:

HEATED VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL TO A SOURCE OF IGNITION.

FIRE FIGHTING PROCEDURES:

FOR FIRES INVOLVING LARGE QUANTITIES OF PRODUCT WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL TURN-OUT GEAR.

FLAMMABLE LIMITS:

LFL: 2.6% @ 100C
UFL: 12.5% @ 130C

MATERIAL SAFETY DATA SHEET

IOHRRISON OIL MSDS #MOAFM

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SECTION IX - PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLATILE
370F, 188C	2.62	< 1	NIL
% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
100%	1.050	COLORLESS	ODORLESS LIQUID

SECTION X - PRECAUTIONARY LABEL

NONE REQUIRED.

SECTION XI - REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations are presented)

NOTICE:

THE INFORMATION HEREIN IS PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE AS OF THE EFFECTIVE DATE SHOWN ABOVE. HOWEVER, NO WARRANTY, EXPRESS OR IMPLIED, IS GIVEN. REGULATORY REQUIREMENTS ARE SUBJECT TO CHANGE AND MAY VARY FROM ONE LOCATION TO ANOTHER; IT IS THE BUYER'S RESPONSIBILITY TO ENSURE THAT ITS ACTIVITIES COMPLY WITH FEDERAL, STATE OR PROVINCIAL AND LOCAL LAWS. THE FOLLOWING SPECIFIC INFORMATION IS MADE FOR THE PURPOSE OF COMPLYING WITH NUMEROUS FEDERAL, STATE OR PROVINCIAL, AND LOCAL LAWS AND REGULATIONS. SEE MSDS SHEET FOR HEALTH AND SAFETY INFORMATION.

U.S. REGULATIONS:

SARA HAZARD CATEGORY: THIS PRODUCT HAS BEEN REVIEWED ACCORDING TO THE EPA "HAZARD CATEGORIES" PROMULGATED UNDER SECTIONS 311 AND 312 OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 (SARA TITLE III) AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES: A DELAYED HEALTH HAZARD.

MATERIAL SAFETY DATA SHEET

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SECTION XII - DOCUMENTARY INFORMATION

ISSUE DATE	:	07/21/92	PRODUCT CODE NO.	:	NONE
MSDS NO.	:	MOAFM	PREV. PROD. CODE NO.	:	NONE
			PREV. MSDS NO.	:	NONE

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.

This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

MSDS (Material Safety Data Sheet)

**Information on Products Distributed and/or
Manufactured by Alaskan Copper Works,
Alaskan Copper & Brass Company or
Stainless Piping Systems, Inc.**

ALASKAN

CAUTION

DUST FUMES MIST

**MAY BE HAZARDOUS TO YOUR HEALTH
DURING CERTAIN MANUFACTURING PROCEDURES**

WEAR

RESPIRATORS/GLOVES/SAFETY GLASSES

USE ADEQUATE VENTILATION

AS REQUIRED

**SEE MSDS FILE FOR SPECIFIC SAFETY
PRECAUTIONS BEFORE HANDLING**

This information and data is being provided on the following pages as required by the Office of Health Compliance Assistance (OSHA) Hazard Communication Standard (HCS), 29 CFR 1910.1200), State of Washington, HCS WAC 296-62-054 through WAC 296-62-05425 and Oregon Occupational Safety and Health Code, Oregon Administrative Rules (OAR) Chapter 435, Division 155. The products manufactured by and distributed by ALASKAN do not, in and of themselves, constitute a hazardous material under these regulations. However, some of the elements contained in these products have been determined to be hazardous by OSHA. These can only be released through certain manufacturing procedures such as burning, melting, welding, sawing, brazing, grinding and machining.

In compliance with these regulations, we are providing you with a summary MSDS for all of our products you currently use or might use in the future.

While the information contained herein is believed to be correct, no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material, or the results to be obtained from the use thereof. User assumes all risks and liability of any use, processing or handling of any material, variations in methods, conditions and equipment to store, handle, or process the materials. Hazards connected with the use of the material are solely the responsibility of the user.

UPDATED August 1, 1992

Stainless Steel Wrought Alloys

Type	UNS Designation	ASTM Mat'l Spec	Carbon % Max	Manganese % Max	Phosphorus % Max	Sulfur % Max	Silicon % Max	Molybdenum %	Chromium* %	Nickel* %	Other Elements %
304	S30400	A 240	.08	2.0	.045	0.03	1.0		18.0-20.0	8.0-10.5	N .10 max
304L	S30403	A 240	.03	2.0	.045	0.03	1.0		18.0-20.0	8.0-12.0	N .10 max
304H	S30409	A 240	.04-.10	2.0	.045	0.03	1.0		18.0-20.0	8.0-10.5	
309S	S30908	A 240	.08	2.0	.045	0.03	1.0		22.0-24.0	12.0-15.0	
310S	S31008	A 240	.08	2.0	.045	0.03	1.5		24.0-26.0	19.0-22.0	
316	S31600	A 240	.08	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	N .10 max
316L	S31603	A 240	.03	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	N .10 max
316H	S31609	A 240	.04-.10	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	
317	S31700	A 240	.08	2.0	.045	0.03	1.0	3.0-4.0	18.0-20.0	11.0-15.0	N .10 max
317L	S31703	A 240	.03	2.0	.045	0.03	1.0	3.0-4.0	18.0-20.0	11.0-15.0	N .10 max
321	S32100	A 240	.08	2.0	.045	0.03	1.0		17.0-19.0	9.0-12.0	Ti=5 x C to .7
321H	S32109	A 240	.04-.10	2.0	.045	0.03	1.0		17.0-19.0	9.0-12.0	Ti=4 x C to .7
347	S34700	A 240	.08	2.0	.045	0.03	1.0		17.0-19.0	9.0-13.0	Cb+Ta=10 x C to 1.1
347H	S34709	A 240	.04-.10	2.0	.045	0.03	1.0		17.0-19.0	9.0-13.0	Cb+Ta=8 x C to 1.0
**	S31803	A 240	.03	2.0	.030	0.02	1.0	2.5-3.5	21.0-23.0	4.5-6.5	N .08-.20
***	S32550	A 240	.04	1.5	.040	0.03	1.0	2.0-4.0	24.0-27.0	4.5-6.5	Cu 1.5-2.5 N .10-.25
254SMO	S31254	A 240	.020	.020-1.0	.030	.01	.80	6.0-6.5	19.5-20.5	17.5-18.5	Cu 0.5-1.0 N 0.18-.22
AL-6XN	N08367	B 688	.030	2.0	.040	.03	1.0	6.0-7.0	20.0-22.0	23.5-25.5	Cu 0.75-max N 0.18-.25

Stainless Steel Cast Alloys

A.C.I. ¹ Type	Wrought Equivalent	Carbon % Max	Manganese % Max	Phosphorus % Max	Sulfur % Max	Silicon % Max	Chromium* %	Nickel* %	Other Elements %
CF-8	304	.08	1.5	.04	.04	2.0	18.0-21.0	8.0-11.0	Mo .50 max
CF-3	304L	.03	1.5	.04	.04	2.0	17.0-21.0	8.0-12.0	Mo .50 max
CH-20	309	.20	1.5	.04	.04	2.0	22.0-26.0	12.0-15.0	Mo .50 max
CK-20	310	.20	1.5	.04	.04	1.75	23.0-27.0	19.0-22.0	Mo .50 max
CF-8M	316	.08	1.5	.04	.04	1.5	18.0-21.0	9.0-12.0	Mo 2.0-3.0
CF-3M	316L	.03	1.5	.04	.04	1.5	17.0-21.0	9.0-13.0	Mo 2.0-3.0
CG-8M	317	.08	1.5	.04	.04	1.5	18.0-21.0	9.0-13.0	Mo 3.0-4.0
****	317L	.03	1.5	.04	.04	1.5	18.0-21.0	9.0-13.0	Mo 3.0-4.0
CF-8C	347	.08	1.5	.04	.04	2.0	18.0-21.0	9.0-12.0	Cb= 8 x C to 1.0
CN-7M	20CB	.07	1.5	.04	.04	1.5	19.0-22.0	27.5-30.5	Mo 2.0 to 3.0 Cu 3.0 to 4.0

Aluminum Wrought Alloys

Alloy	UNS Designation	ASTM Mat'l Spec	Manganese % Max	Magnesium %	Iron % Max	Zinc % Max	Silicon % Max	Titanium % Max	Copper % Max	Chromium* %	Aluminum %
3003	A93003	B 209	1.0-1.5		.7	.10	.6		.05-.20		r
5083	A95083	B 209	.40-1.0	4.0-4.9	.40	.25	.40	.15	.10	.05-.25	r
5086	A95086	B 209	.20-.7	3.5-4.5	.50	.25	.40	.15	.10	.05-.25	r
6061	A96061	B 209	.15	.80-1.2	.7	.25	.40-.8	.15	.15-.40	.04-.35	r

¹ Formerly Alloy Casting Institute, now called Steel Founders Society of America

* Items with a single * are suspected carcinogens in humans: see Pages 4 -6 for detailed information.

**Commonly referred to as Al 2205™

*** Commonly referred to as Ferralium 255®

**** Not an ACI alloy, but frequently identified as CG-3M

r = remainder

Note: Chemistry for wrought alloys is for sheet and plate only. Similar material specifications apply to other forms.

Nickel Base Wrought Alloys

Symbol ¹ and Grade	UNS Desig- nation	ASTM Mat'l Spec	Carbon % Max	Manga- nese % Max	Phos- phorus % Max	Copper % Max	Iron % Max	Molyb- denum %	Chrom- ium* %	Nickel* %	Other Elements % Max
N (200)	N02200	B 162	.15	.35		.25	.40			99.0 min	Si .35 S .01
NL (201)	N02201	B 162	.02	.35		.25	.40			99.0 min	Si .35 S .01
NC (400)	N04400	B 127	.30	2.0		28.0-34.0	2.5			63.0 min	Si .5 S .024
NC1 (600)	N06600	B 168	.15	1.0		.50	6.0-10.0		14.0-17.0	72.0 min	Si .5 S .015
NIC (800)	N08800	B 409	.10	1.5		.75	39.5 min		19.0-23.0	30.0-35.0	Si 1.0 S .015 Ti .15-.60 Al .15-.60
330 (RA 330)	N08330	B 536	.10	2.0	.030	1.0	r		17.0-20.0	34.0-37.0	Si .75-1.5 S .03 Pb* .005 Sn .025
NICMC (825)	N08825	B 424	.05	1.0		1.5 - 3.0	22.0 min	2.5-3.5	19.5-23.5	38.0-46.0	Si .5 S .03 Al .2 Ti .6-1.2
20CB	N08020	B 463	.07	2.0	.045	3.0-4.0	r	2.0-3.0	19.0-21.0	32.0-38.0	Si 1.0 S .035 Cb+Ta 8xC to 1.0
HB-2 (Hast B-2)	N10665	B 333	.02	1.0	.040		2.0	26.0-30.0	1.0	r	Si .10 S .03 Co 1.0
HC276 (Hast C-276)	N10276	B 575	.02	1.0	.040		4.0-7.0	15.0-17.0	14.5-16.5	r	Si .08 S .03 Co 2.5 V .35 W 3.0-4.5
HC4 (Hast C-4)	N06455	B 575	.015	1.0	.040	1.5-2.5	8.0-21.0	6.0-8.0	21.0-23.5	r	Si 1.0 S .03 Co .2 W .5 V .5 B .01 Al+Ti .5
HN (Hast N)	N10003	B 434	.04-.08	1.0	.015	.35	5.0	15.0-18.0	6.0-8.0	r	Si 1.0 S .02 Co .2 W .5 V .5 B .01 Al+Ti .5
HX (Hast X)	N06002	B 435	.05-.15	1.0	.040		17.0-20.0	8.0-10.0	20.5-23.0	r	Si 1.0 S .03 Co 5-2.5 W 2-1.0
NCMC (625)	N06625	B 443	.10	.50	.015		5.0	8.0-10.0	20.0-23.0	58.0 min	Si .5 S .15 Co 1.0 (if determined) Al .4 Ti .4 Cb+Ta 3.15-4.15
904L	N08904	B 625	.020	2.0	.045	1.0-2.0	r	4.0-5.0	19.0-23.0	23.0-28.0	Si 1.0 S .035

¹As listed in ASTM B 366, Table 1 (except Alloy 904L)

Titanium Wrought Alloys

Grade	ASTM Mat'l Spec	Nitrogen % Max	Carbon % Max	Hydrogen % Max	Iron % Max	Oxygen % Max	Titanium %	Residuals (each) % Max	Residuals (total) % Max	Other Elements %
Grade 1	B 265	.03	.10	.015	.20	.18	r	.10	.40	
Grade 2	B 265	.03	.10	.015	.30	.25	r	.10	.40	
Grade 3	B 265	.05	.10	.015	.30	.35	r	.10	.40	
Grade 4	B 265	.05	.10	.015	.50	.40	r	.10	.40	
Grade 5	B 265	.05	.10	.015	.40	.20	r	.10	.40	Al 5.5-6.75 V 3.5-4.5
Grade 6	B 265	.05	.10	.020	.50	.20	r	.10	.40	Al 4.0-6.0 Sn 2.0-3.0
Grade 7	B 265	.03	.10	.015	.30	.25	r	.10	.40	Pd* .12-.25
Grade 10	B 265	.05	.10	.020	.35	.18	r	.10	.40	Sn 3.75-5.25 Mo 10.0-13.0 Zr 4.5-7.5
Grade 11	B 265	.03	.10	.015	.20	.18	r	.10	.40	Pd* .12-.25
Grade 12	B 265	.03	.08	.015	.30	.25	r	.10	.40	Mo .2-.4 Ni .6-.9

r = remainder

Note: Chemistry for wrought alloys is for sheet and plate only. Similar material specifications apply to other forms.

* Items with a single * are suspected carcinogens in humans: see Pages 4 -6 for detailed information.

Chemical Analysis

Copper Alloys¹

UNS Designation	Common Name	Copper %	Zinc %	Lead* %	Manganese %	Tin %	Phosphorus %	Arsenic* %	Tellurium %	Zirconium %	Silicon %	Cobalt %	Beryllium* %
C10100	Oxygen Free Electronic	99.99+					.0003		.0010				
C10200	Oxygen Free	99.95+											
C10300	OFXLP	99.95+											
C11000	Electrolytic Tough Pitch	99.99+											
C12000	Phosphorus Deoxidized	99.9+					.008						
C12200	Phosphorus Deoxidized	98.98					.020						
C14500	Tellurium Bearing	99.49					.010		.50				
C17200	Beryllium Copper	98.1+									.20	2.5	1.80-2.0
C17300	Beryllium Copper	97.7+	.40									.20	1.80-2.0
C17500	Beryllium Copper	96.9+									.20		.20-60

Copper-Based Alloys¹

UNS Designation	Common Name	Copper %	Zinc %	Lead* %	Manganese %	Tin %	Phosphorus %	Arsenic* %	Tellurium %	Nickel* %	Silicon %	Iron %	Aluminum %
C22000	Commercial Bronze	90.00	10.0										
C23000	Red Brass, 85%	85.00	15.0										
C24000	Low Brass, 80%	80.00	20.0										
C26000	Cartridge Brass	70.00	30.0										
C27000	Yellow Brass, 70%	65.00	35.0										
C27200	Yellow Brass, 63%	63.00	37.0										
C27400	Yellow Brass, 62%	62.00	38.0										
C31400	Leaded Commercial Bronze	89.00	9.1	1.90									
C33000	Low Leaded Brass (Tube)	66.50	33.0	.50									
C34900	Low Leaded Brass (Tube)	66.29	37.5	.30									
C35600	Extra High Leaded Brass	62.50	35.0	2.50									
C36000	Free Cutting Brass	61.50	35.3	3.25									
C38500	Architectural Bronze	57.00	40.0	3.00									
C44300	Admiralty, Arsenical	71.00	27.96			1.0		.040					
C46400	Naval Brass, Uninhibited	60.00	39.25			.75							
C48200	Naval Brass, High Leaded	60.00	38.55	.70		.75							
C51000	Phosphor Bronze, 5% A	94.80				5.0	.20						
C51100	Phosphor Bronze	95.60				4.2	.20						
C61400	Aluminum Bronze	90.25										2.75	7.00
C63000	Aluminum-Nickel Bronze	82.00			1.0					5.0		2.50	9.50
C64200	Aluminum-Silicon Bronze	90.75									1.85		6.95
C65100	Low Silicon Bronze B	98.25			.25						1.50		
C65500	High Silicon Bronze A	95.80			1.1						3.10		
C67500	Manganese Bronze A	58.50	39.25		.25	1.0						1.00	
C70600	90-10 Copper-Nickel	88.35			.40					10.0		1.25	
C71500	70-30 Copper-Nickel	68.90			.60					30.0		.50	
C75200	18% Spring Nickel Silver	64.50	17.25		.25					18.0			
C90300	Tin Bronze	87.50	4.00	.30		8.25				1.0		.20	
C93200	SAE 660 Bearing Bronze	83.00	3.00	7.00		7.00							
C95400	Aluminum Bronze (Armco 18™)	83.50			.50						1.50		10.50

¹Nominal Composition is listed.

* Items with a single * are suspected carcinogens in humans; see Pages 4 -6 for detailed information.

Health Hazard Information

The below listed ingredients have been determined to be a health hazard at 1% or greater of the composition or in the case of carcinogens (noted with *) at .1% of the composition. See previous pages for chemical analysis of products. Inhalation of dust and/or fume is the primary

CAUTION

DUST FUMES MIST
MAY BE HAZARDOUS TO YOUR HEALTH
DURING CERTAIN MANUFACTURING PROCEDURES

WEAR
RESPIRATORS/GLOVES/SAFETY GLASSES
USE ADEQUATE VENTILATION
AS REQUIRED
SEE MSDS FILE FOR SPECIFIC SAFETY
PRECAUTIONS BEFORE HANDLING

INGREDIENTS	CAS NO.	OSHA TWA ¹	ACGIH TLV-TWA ¹	ACGIH TLV-STEL ¹
Aluminum (Al)	7429-90-5	15 Dust/5 Fume	10 Dust/5 Fume	
Aluminum Coating	7429-90-5	15 Dust/5 Fume	10 Dust/5 Fume	
*Antimony (Sb)	7440-36-0	0.5 Dust & Fume	0.5 Dust & Fume	
*Arsenic (As) ²	7440-38-2	10 µg Inorganic	0.2 Dust & Fume	
*Beryllium (Be) ²	7440-41-7	2 µg Compounds	0.002 Dust & Fume	
Bismuth (Bi)	7440-69-9	Not Established	Not Established	
Boron (B)	7440-42-8	10 Oxide Dust	10 Oxide Fume	
*Cadmium(Cd) ³	7440-43-9	0.1 Fume .3 CL	0.05 Dust & Fume	
Carbon (C)	7440-44-0	Not Established	Not Established	
*Chromium (Cr)	7440-47-3	1.0 Chrome Metal	0.5 Chrome Metal & Compounds	
Cobalt(Co)	7440-48-4	0.05 Dust & Fume	0.05 Dust & Fume	
Columbium (Cb)	7440-03-1	Not Established	Not Established	
Copper (Cu)	7440-50-8	1.0 Dust & Mists/0.1 Fume	1.0 Dust & Mists/0.2 Fume	
Iron (Fe)	7439-89-6	10 Oxide Fume	5 Oxide Fume	
*Lead (Pb) ²	7439-92-1	50 µg Inorganic	0.15 Dust & Fume	
Magnesium	1309-48-4	10 Total Particulate	10 Oxide Fume	
Manganese (Mn) ³	7439-96-5	1 Fume/5 CL Compounds	5 Dust/1 Fume	3 Fume
Molybdenum (Mo)	7439-98-7	10 Total Dust	10 Insoluble Compounds	
*Nickel (Ni)	7440-02-0	1 Nickel Metal	0.05 Nickel Metal	
Phosphorous (P)	7723-14-0	0.1 Phosphorus	0.1 Phosphorus	
Selenium (Se)	7782-49-2	0.2 Metals & Compounds	0.2 Metals & Compounds	
Silicon (Si)	7440-21-3	10 Total Dust	10 Total Dust	
Silver (Ag)	7440-22-4	0.01 Silver Metal	0.01 Silver Metal	
Sulfur (S)	7704-34-9	5 Sulfur Dioxide	5.2 Sulfur Dioxide Dust/2 Fume	13/5 SO ₂ Dust/Fume
Tantalum(Ta)	7440-25-7	5.0 Metal Dust Oxide	5.0 Metal Dust Oxide	
Tellurium(Te)	13494-80-9	0.1 Tellurium	0.1 Tellurium	
Tin(Sn)	7440-31-5	2 Inorganic Compounds	2 Tin Metal	4 Tin Metal
Titanium(Ti)	7440-32-6	10 Total Dust	10 Titanium Dioxide	
Tungsten(W)	7440-33-7	1 Soluble/5 Insoluble	1 Soluble/5 Insoluble Compounds	
Vanadium (V)	7440-62-2	0.05 Dust & Fume	0.05 Dust & Fume	
Zinc	7440-66-6	10 Oxide Dust	10 Dust/5 Fume	10 Fume
Zirconium (Zr)	7440-67-7	5 Zirconium Compounds	5 Zirconium & Compounds	10 Zirconium

¹Allowable concentrations are expressed in milligrams per cubic meter of air, unless noted

²µg = microgram (one millionth of a gram; 10⁻⁶ gram)

³CL = ceiling limit

Aluminum: Excessive exposure to aluminum fume and dust has been associated with lung disease, however this effect may be due to simultaneous silica exposure.

***Antimony:** May cause irritation to the skin and mucous membranes. Symptoms include metallic taste in the mouth, vomiting, colic, loss of appetite and weight, and diarrhea. In acute poisoning there may be death from circulatory or respiratory failure or toxic hepatitis. A skin/contact dermatitis may result which starts as an inflammation of the hair follicles and can progress through pus formation and sloughing to leave a contracted scar.

***Arsenic:** Excessive exposure to airborne concentrations of inorganic compounds may cause lung cancer. May cause irritation to the skin and mucous membranes. Gastrointestinal, nervous system, kidney and liver disorders have been reported in acute or chronic overexposures. Depression of bone marrow may also occur.

*Items with a single * are suspected carcinogens in humans. See Pages 4-6 for detailed information.

Health Hazard Information

-
- *Beryllium:** Airborne particles of beryllium alloys can cause irreversible lung damage and result in an acute or chronic systemic disease called berylliosis. Symptoms include a relatively non-productive cough, progressive difficulty in breathing, fatigue after slight exertion, loss of appetite and weight. The acute form symptoms appear in several hours to several weeks with a usually rapid progression of signs including anorexia, dyspnea, and heart disease. Chronic symptoms are usually delayed in their onset and persistent in nature and can be triggered or aggravated by stresses, such as pregnancy, respiratory infection, and thyrotoxicosis. Granulomatous lesions of the skin, liver, kidneys, spleen and lymph nodes have been reported. Beryllium is also suspected to be a human carcinogen and has caused cancer in laboratory animals.
- *Cadmium:** Inhalation of fumes may cause respiratory irritation with a sore, dry throat and a metallic taste followed by a cough, chest pain, and difficulty in breathing. Bronchitis, pneumonitis and pulmonary edema, headaches, dizziness, loss of weight and appetite have also been reported. The liver, kidneys and bone marrow may be injured by the presence of the metal. Continued exposure to lower levels of cadmium may result in irreversible lung and kidney damage. Single high level exposure can cause severe and possibly fatal lung irritation. Cadmium is also a suspected human carcinogen.
- *Chromium:** May act as an allergen and cause a dermatitis and/or produce a pulmonary sensitization. Chromic acid and chromates have a direct corrosive effect on the skin and the mucous membranes of the upper respiratory tract. The International Agency for Research on Cancer (IARC) has determined that there is a significant increase in lung cancer. This finding is supported by animal studies.
- *Cobalt:** Cobalt has been reported as causing hypersensitization type dermatitis in some individuals. Excessive and prolonged overexposure of cobalt may cause an asthma-like disease with cough and dyspnea.
- Copper:** Dust and fumes from melting, grinding and cutting may present a potential health hazard. Fumes may cause a metal fume fever with flu-like symptoms and damage or ulceration of the nasal passages. There may also be skin and hair discoloration. Dermatitis due to sensitization may occur in some individuals.
- Iron:** The inhalation of iron oxide fumes or dust may cause an apparent benign pneumoconiosis which is called siderosis. Shortness of breath and coughing are common.
- *Lead:** Lead is an accumulative poison. Short term exposure symptoms may include stomach cramps, fatigue, constipation, and decreasing appetite. Inhalation of large amounts of lead may lead to seizures, coma, and death. Long term exposure symptoms are nausea, vomiting, severe anemia, paralysis of the wrist joint and kidney damage. Exposure can result in decreased fertility and/or increased chances of miscarriage or birth defects.
- Magnesium:** Heavy exposure to fume may be irritating to eyes, nose and throat and cause metal fume fever.
- Manganese:** Manganese poisoning is not fatal although it is extremely disabling. Prolonged exposure can affect the central nervous system. A fever and chills may be typical symptoms.
- *Nickel:** Often causes allergic dermatitis know as "nickel itch". Inhalation can cause hypertrophic rhinitis and nasal sinusitis. In extreme cases it is suspected of causing cancer of the nasal cavities, lungs and other organs.
- Silicon:** May be responsible for benign pneumoconiosis, but is not considered to be dangerous in the cold state.
- Tin:** Tin fume or dust is moderately irritating to the eyes and airways and may cause an apparent benign pneumoconiosis called stannosis which is not disabling.
- Zinc:** Even as an oxide, zinc is low in toxicity but inhalation of fumes may cause "metal fume fever". Onset of symptoms may be delayed 4-12 hours and can include irritation of the nose, mouth and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, pains in the muscles and joints, thirst, bronchitis or pneumonia and a bluish tint to the skin. These symptoms go away in 24-48 hours and leave no lasting effect.

Physical Data

Alloy Group	Appearance & Odor	Specific Gravity	Melting Point	Solubility In Water
Aluminum	Silvery Gray/Odorless	2.5-2.9	900° F - 1200° F	Negligible
Copper	Reddish Tone/Odorless	7.45-9.00	1290° F - 2260° F	Insoluble
Copper-Nickel	Silver to Red Brown	8.94	2240° F - 2260° F	Insoluble
Nickel & Nickel Base	Metallic/Odorless	8.00	2600° F - 2800° F	Insoluble
Beryllium Copper	Copper to Brass/Odorless	8.26	1600° F - 1875° F	Insoluble
Brass	Yellow to Gold Odorless	7.45-9.00	1290° F - 2260° F	Insoluble
Bronze	Red Brown to Gold/Odorless	7.45-9.00	1290° F - 2260° F	Insoluble
Stainless Steel	Silvery Gray/Odorless	8.00	2400° F - 2800° F	Insoluble
Carbon Steel	Cloudy Gray/Odorless	8.00	2600° F - 2800° F	Insoluble

Note: Boiling Point, Vapor Pressure, Evaporation Rate and Vapor Density are Not Applicable.

Special Precautions and Information

FIRE AND EXPLOSION:

The metal products manufactured and/or distributed by Alaskan are in a stable solid state and in that state pose no threat of fire or explosion. Fires involving fines or chips should be extinguished with dry sand or Class D extinguishers. Halogenated extinguishers should NOT be used. Moisture trapped in molten metal may cause an explosion. Hazardous polymerization will not occur.

SPILL OR LEAK PROCEDURES:

Vacuum if possible, rather than sweep fines, dust and filings. If sweeping is required, use a dust inhibitor. Follow Federal, State and local regulations for disposal. Most metal chips and scrap are fully recyclable.

PERSONNEL PROTECTION:

Local exhaust ventilation should be provided for melting, welding, burning, grinding and cutting operations. If fumes and dust cannot be controlled with exhaust ventilation, an appropriate NIOSH-approved respirator should be used to prevent excessive inhalation exposure. Gloves and barrier creams may be necessary to prevent skin sensitization and dermatitis and to limit cuts and abrasions. Eye protection through the use of approved safety glasses or goggles should be worn when working with metal processing and when entering or passing through an area where such processing is being done. Approved ear plugs or ear muffs should be worn where noise levels reach or exceed 90 decibels. Employees involved in the handling of material should wear safety shoes equipped with steel toes.

EMERGENCY AND FIRST AID:

EYES: Immediately flush eyes with water for at least 15 minutes. SKIN: Brush off excess dust and scrub area with soap and water. Metal edges cut easily, care should be taken in handling material. Cuts should be attended to in a common sense manner and medical help should be contacted when serious injuries are sustained. INHALATION: Remove to fresh air, contact medical attention. Wear masks when appropriate. INGESTION: Seek medical help if large quantities have been ingested. Food should not be consumed in the work area.

Abbreviated Glossary of Acronyms and Terms

ACGIH	- American Conference of Governmental Industrial Hygienists	NTP	- National Toxicology Program
CAS	- Chemical Abstracts Service Registry Number	PEAK	- 30 Minute Maximum Duration Concentration Above Ceiling Limit
CEILING	- Limit Not To be Exceeded, Except For Peak Limit	PEL	- Permissible Exposure Limit
EPA	- Environmental Protection Agency	STEL	- Short Term Exposure Limit
IARC	- International Agency for Research on Cancer	TLV	- Eight hour average threshold limit value
NIOSH	- National Institute for Occupational Safety and Health of the Public Health Service, U.S. Department of Health and Human Services (DHHS)	TWA	- Time Weighted Limit

THIS DOCUMENT PREPARED BY ARTHUR GRUNBAUM UNDER THE SUPERVISION OF DOUGLAS ROSEN.

FOR INFORMATION CALL (206) 623-5800, ASK FOR MSDS ADMINISTRATOR.

ALASKAN COPPER COMPANIES, INC. P.O. BOX 3546, SEATTLE, WASHINGTON, 98134

UPDATED: AUGUST 1, 1992.

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IMPORTANT INFORMATION

REGARDING HAZARDOUS MATERIALS IN
ACCORDANCE WITH STATE AND FEDERAL
REGULATIONS. DO NOT DELAY!
FORWARD TO SAFETY ADMINISTRATOR.

Material Safety Data Sheet

DowElanco Indianapolis, IN 46268

Emergency Phone: 517-636-4400

Product Code: 01662

Page: 1

Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92

MSDS:001715

1. INGREDIENTS: (% w/w, unless otherwise noted)

2,4-Dichlorophenoxyacetic acid, butoxyethyl ester	CAS# 001929-73-3	34.4%
3,5,6-Trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester	CAS# 064700-56-7	16.5%
Other ingredients, including:		49.1%
Kerosene	CAS# 008008-20-6	
Proprietary surfactants		

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: >175C (kerosene)
VAP PRESS: 0.1mm @37.8C (kerosene)
VAP DENSITY: 4.7 (kerosene)
SOL. IN WATER: Forms an emulsion
SP. GRAVITY: 1.013 @ 20C/20C
APPEARANCE: Reddish brown liquid.
ODOR: Sweet odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 148F, 64.4C
METHOD USED: Setaflash

FLAMMABLE LIMITS
LFL: Not determined
UFL: Not determined

EXTINGUISHING MEDIA: Water fog, foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Noxious fumes under fire conditions.
Contain water from fire fighting to prevent entry to water supplies.

FIRE-FIGHTING EQUIPMENT: Use positive pressure self-contained

(Continued on page 2)



Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92

MSDS:001715

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Avoid temperatures above or near flash point.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Acid, base and oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Noxious fumes, nitrogen oxide, hydrogen chloride and phosgene may result under fire conditions.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Use appropriate safety equipment. Dike large spills. Absorb spills with inert dry material such as sand or sawdust. Do not use water for cleanup.

DISPOSAL METHOD: If wastes cannot be disposed of by use according to label instructions, contact your state pesticide or Environmental Control Agency or the hazardous waste representative at the nearest EPA regional office for guidance.

6. HEALTH HAZARD DATA:

EYE: May cause moderate eye irritation. Corneal injury is unlikely.

SKIN CONTACT: Prolonged exposure may cause skin irritation. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. Repeated skin exposure may result in absorption of harmful amounts. The LD50 for skin absorption in rabbits is >2000 mg/kg.

INGESTION: Single dose oral toxicity is low. The oral LD50 for male rats is 2589 mg/kg and for female rats is 2398 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury, swallowing amounts larger than that may cause injury. If aspirated (liquid

(Continued on page 3)

DowElanco Indianapolis, IN 46268

Emergency Phone: 517-636-4400

Product Code: 01662

Page: 3

Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92

MSDS:001715

6. HEALTH HAZARD DATA: (CONTINUED)

enters the lung), may cause lung damage or even death due to chemical pneumonia.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract. Signs and symptoms of excessive exposure may be central nervous system effects. The LC50 for male rats is approximately 5 mg/L and >5 mg/L for females.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Excessive exposure may cause liver, kidney, blood, gastrointestinal, muscular and respiratory effects.

CANCER INFORMATION: Triclopyr did not cause cancer in long-term animal studies. Various animal cancer tests have shown no reliably positive association between 2,4-D exposure and cancer. Epidemiology studies on herbicide use have been both positive and negative with the majority being negative. (2,4-D)

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

REPRODUCTIVE EFFECTS. In animal studies, triclopyr has been shown not to interfere with reproduction. Excessive dietary levels of 2,4-D caused toxic effects (weight and viability reduction) to the offspring in a rat reproduction study.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Results of in vitro ('test tube') mutagenicity tests have been inconclusive. Results of mutagenicity tests in animals have been inconclusive.

7. FIRST AID:

EYES: Flush immediately with plenty of water. Get medical attention if irritation persists.

SKIN: Wash off in flowing water or shower. Get medical attention if irritation persists.

INGESTION: Do not induce vomiting. Call a physician or Poison Control Center.

INHALATION: Remove to fresh air if effects occur. Consult a

Continued on page 4)

Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92

MSDS:001715

7. FIRST AID: (CONTINUED)

physician.

NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): 3,5,6-Trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester: the Dow Industrial Hygiene Guide is 2 mg/m³ as the acid equivalent, skin. Kerosene: the Dow Industrial Hygiene Guide is 10 mg/m³. ACGIH TLV and OSHA PEL are 10 mg/m³ for 2,4-D acid.

VENTILATION: Good general ventilation should be sufficient for most conditions.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use safety glasses. Where contact with this material is likely, chemical goggles are recommended because eye contact may cause discomfort even though it is unlikely to cause injury.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: See label. Keep out of reach of children. Avoid eye or skin contact. Provide eye fountain and washing facilities near work area. Do not store near fertilizer, seeds, insecticides and fungicides. Keep away from open flame.

MSDS STATUS: Sections 6,7,8 and regsheet Revised 8/92

For information regarding state/provincial and federal regulations see the Regulatory Information Section.

(R) Indicates a Trademark Of DowElanco

DowElanco Indianapolis, IN 46268

Emergency Phone: 517-636-4400

Product Code: 01662

Page: R-1

Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92

MSDS:001715

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

- An immediate health hazard
- A delayed health hazard
- A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

OSHA HAZARD COMMUNICATION STANDARD:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

(R) Indicates a Trademark of DowElanco
The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult DowElanco For Further Information.

MATERIAL SAFETY DATA SHEET

Identity	Date Prepared: 8/7/92
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Pebble Quicklime

Section I

Ash Grove Cement Company
 13939 N. Rivergate Blvd.
 P.O. Box 83007
 Portland, Oregon 97283
 (503)286-1677

Section II - Hazardous Ingredients/Identity Information

	OSHA PEL	ACGIH TLV
Quicklime, CaO (95%)	2mg/M ³	2mg/M ³

Section III - Physical/Chemical Characteristics

Boiling Point	5162°F	Specific Gravity 3.2-3.4
Vapor Pressure (mmHg)	Calcium oxide has no vapor pressure at standard temperature and pressure	
Melting Point	4737°F	Evaporation Rate
Vapor Density (Air=1)	Zero	Zero
Solubility in Water 0.54- 0.14% by Weight	(Butyl Alcohol=1)	
Appearance and Odor	White granules or powder; faint earthy odor.	

Section IV - Fire and Explosion Hazard Data

Flash Point (method used)	Calcium oxide does not support combustion
Flammable Limits	Calcium oxide is not flammable
LEL:	Calcium oxide will not explode or cause explosion
UEL:	Calcium oxide will not explode or cause explosion
Extinguishing Media	Calcium oxide is non-flammable and non- explosive
Special Fire Fighting Procedures: CaO in itself is incombustible; in contact with water will hydrate, evolving heat. The heat could ignite paper, wood, or rags.	
Unusual Fire and Explosion Hazards:	None

Section V - Reactivity Data

Stability: Unstable X	Conditions to avoid: Contact with water, acids. Stable if no moisture present
Incompatibility (Materials to avoid) May react violently and incandescantly with boric oxide, hydrogen fluoride, phosphorus pentoxide, chlorine trifluoride, and fluorine. Reaction with Interhalogens may cause ignition.	
Hazardous Decomposition or by products	None
Hazardous	May occur: No
Polymerization Will not occur: X	Conditions to avoid -- NA

Section VI - Health Hazard Data

Route(s) of entry:	Inhalation? X	Skin? X	Ingestion? X
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Health Hazards (Acute and Chronic) & Emergency First Aid Procedures.

INHALATION: CORROSIVE.

ACUTE EXPOSURE - Inhalation of low concentrations may cause sore throat, coughing, choking, and dyspnea. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.

CHRONIC EXPOSURE - Bronchial irritation with chronic cough and attacks of bronchial pneumonia are possible.

FIRST AID - Remove from exposure to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

SKIN CONTACT: CORROSIVE.

ACUTE EXPOSURE - The substance penetrates the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.

CHRONIC EXPOSURE - A chronic dermatitis may follow repeated contact.

FIRST AID - Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

EYE CONTACT: CORROSIVE.

ACUTE EXPOSURE - Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction. Blindness may occur.

CHRONIC EXPOSURE - Prolonged contact may cause conjunctivitis.

FIRST AID - Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). A near neutral solution of 0.01 to 0.05 molar sodium EDTA is helpful as an irritant to loosen masses from tissues. Get medical attention immediately. (Grant, toxicology of the eye, volume II). Administration of drugs to the eyes should be performed by qualified medical personnel.

**INGESTION;
CORROSIVE.**

ACUTE EXPOSURE - Ingestion is followed by severe pain, vomiting, diarrhea, and collapse. The vomitus may contain blood and desquamated mucosal lining. If death does not occur in the first 24 hours, the patient may improve for 2-4 days and then have a sudden onset of severe abdominal pain, abdominal rigidity, and rapid hypotension indicating delayed gastric esophageal perforation.

CHRONIC EXPOSURE - None known.

FIRST AID - dilute by giving water or milk to drink immediately and allow vomiting to occur. As soon as possible, examine mouth and throat and irrigate injured areas with 1% acetic acid until alkali is completely neutralized. Avoid gastric lavage or emetics. These may increase the possibility of perforation. (Dreisbach, handbook of poisoning, 11th ed.). Administration of drugs or antidote should be performed by qualified medical personnel.

Carcinogenicity: NA	NTP: NA	IARC Monograph? NA
OSHA Regulated? Yes	TLV of 2mg/M ³	
Medical Conditions Generally Aggravated by Exposure: NA		

Section VII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled:

SPILL AND LEAK PROCEDURES

SOIL SPILL:

Dig holding area such as lagoon, pond or pit for containment.

Use protective cover such as a plastic sheet to prevent material from dissolving in fire extinguishing water or rain.

WATER SPILL:

Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.

Use activated carbon to absorb spilled substance that is dissolved. Use suction hoses to remove trapped spill material.

OCCUPATIONAL SPILL:

Do not touch spilled material. Stop leak if you can do it without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, with shovel place material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal.

WASTE DISPOSAL METHOD

1. May be used to neutralize acid wastes
2. May be used agriculturally
3. Controlled discharge into sewers with sewage plant's approval

Precautions to be Taken in Handling and Storing

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

Section VIII - Control Measures

Respiratory Protection (Specify Type):

RESPIRATOR:

25 MG/M³ - Dust and Mist Respiratory

50 MG/M³- Dust and Mist Respirator (Except Single - Use and Quarter - Mask Respirators.)
Fume or High - Efficiency Particulate Respirator.
Supplied - Air Respirator.
Self - contained Breathing Apparatus.

250 MG/M³-High-Efficiency Particulate Respirator with a Full Facepiece.
Supplied-Air Respirator with a Full Facepiece, Helmet, or Hood.
Self-Contained breathing apparatus with a full Facepiece.

Escape - High-Efficiency Particulate Respirator with a Full Facepiece. Self - Contained Breathing Apparatus.

Fire fighting - Self-Contained Breathing Apparatus with a Full Facepiece Operated in Pressure-Demand or Positive-Pressure Mode.

VENTILATION:

Process enclosure or local exhaust ventilation.
Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet Type Work Gloves

Eye Protection: Tight fitting Goggles

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices:

Immediately after working with Quicklime, workers should shower with soap and water.

Emergency Number (800)457-2022 or (510)233-3737

RECEIVED
SEP 03 1992



Material Safety Data Sheet

CHEVRON Diesel Fuel No. 2

CPS272102

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3746534
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
BULK LUBE OIL PICK-UP WB
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: September 01, 1992

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised for indexing purposes only. No changes have been made in this MSDS.

1. PRODUCT IDENTIFICATION

CHEVRON Diesel Fuel No. 2

DANGER: - COMBUSTIBLE
- HARMFUL OR FATAL IF SWALLOWED - CAN ENTER LUNGS
AND CAUSE DAMAGE
- CAUSES SKIN IRRITATION
- CANCER HAZARD
- PROLONGED OR REPEATED SKIN CONTACT MAY INCREASE THE
RISK OF SKIN CANCER
- KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS272102
PRODUCT INFORMATION: (510)242-5357

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital. Note to Physician: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation.

SKIN IRRITATION:

This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain or a feeling of heat, discoloration, swelling, and blistering. Read the Additional Health Data section (12) of this document for more information.

DERMAL TOXICITY:

If absorbed through the skin, this substance is considered practically non-toxic to internal organs.

RESPIRATORY/INHALATION:

Prolonged breathing of vapors can cause central nervous system effects. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. This hazard evaluation is based on data from similar materials.

INGESTION:

If swallowed, this substance is considered practically non-toxic to internal organs. Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the

substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use this material only in well ventilated areas.

5. FIRE PROTECTION

FLASH POINT: (P-M) 125F (52C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: 0.6 Upper: 4.7

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 2; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 F.

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire document.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

Revision Number: 12

Revision Date: 01/03/92

MSDS Number: 000525

NDA - No Data Available

NA - Not Applicable

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

WARNING! Not for use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Pale yellow liquid.

BOILING POINT: 176 - 370C (348-698F)

MELTING POINT: NA

EVAPORATION: NDA

SPECIFIC GRAVITY: 0.84 @ 15.6/15.6C (Typical)

VAPOR PRESSURE: 0.04 PSIA @ 40C

PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NDA

VISCOSITY: 1.9 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

Eliminate all sources of ignition in vicinity of spill or released vapor.

Clean up spills immediately, observing precautions in Protective Equipment section. This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems.

Revision Number: 12

Revision Date: 01/03/92

MSDS Number: 000525

NDA - No Data Available

NA - Not Applicable

U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-8802.

DISPOSAL METHODS:

Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Diesel Fuel No. 2

CONTAINING

100.0 % FUELS, DIESEL, NO. 2
CAS68476346

DISTILLATES, HYDRODESULFURIZED MIDDLE
CAS64742809

DISTILLATES, STRAIGHT RUN MIDDLE
CAS64741442

KEROSINE
CAS8008206

KEROSINE, HYDRODESULFURIZED
CAS64742810

DISTILLATES, LIGHT CATALYTIC CRACKED
CAS64741599

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

Revision Number: 12	Revision Date: 01/03/92	MSDS Number: 000525
NDA - No Data Available	NA - Not Applicable	

10. REGULATORY INFORMATION

DOT basic descriptions can vary based on package quantity and may not coincide with international description requirements. Consult the Hazardous Materials Regulations in 49CFR and the appropriate Dangerous Goods Regulations to confirm description applicability to specific shipments.

DOT SHIPPING NAME: FUEL OIL, NO. 2
DOT HAZARD CLASS: COMBUSTIBLE LIQUID
DOT IDENTIFICATION NUMBER: NA1993

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; YES
2. Delayed (Chronic) Health Effects; YES
3. Fire Hazard; YES
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

KEROSENE

is found on lists: 02,10,11,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

Minimal effects clearing in less than 24 hours.

SKIN IRRITATION:

Moderate irritation at 72 hours. (Moderate erythema).

DERMAL TOXICITY:

The dermal LD50 in rabbits is > 5 ml/kg.

RESPIRATORY/INHALATION:

The 4-hour inhalation LC50 in rats is greater than 5 mg/l.

INGESTION:

The oral LD50 in rats is > 5 ml/kg.

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525
NDA - No Data Available NA - Not Applicable

ADDITIONAL TOXICOLOGY DATA:

The data above is obtained from studies sponsored by the American Petroleum Institute (API).

12. ADDITIONAL HEALTH DATA**ADDITIONAL HEALTH DATA COMMENT:**

This product contains a mixture of petroleum hydrocarbons called middle distillates (which means they boil between approximately 350F and 700F). Because of this broad description, many products are considered middle distillates yet they are produced by a variety of different petroleum refining processes. Toxicology data developed on some middle distillates found that they caused positive responses in some mutagenicity tests and caused skin cancer when repeatedly applied to mice over their lifetime. This product may contain some middle distillates found to cause those adverse effects.

Whole diesel engine exhaust was reviewed by the International Agency for Research on Cancer (IARC) in their Monograph 46 (1989). Evidence for causing cancer was considered sufficient in animals and limited in humans. IARC placed diesel exhaust in category 2A, considering it probably carcinogenic to humans.

The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust. The excess risk of cancer for people exposed to diesel exhaust has not been determined as studies on exposed workers have been inconclusive. It is recommended that exposure to diesel exhaust be minimized to reduce the potential cancer risk.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525
NDA - No Data Available NA - Not Applicable

05-02-005

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME: Priestley Oil & Chemical Co.
ADDRESS: 2429 North Borthwick P.O. Box 12570
Portland, OR 97212

Emergency Telephone: (503) 288-5294
DATE REVISED: 10/1/92

HMIS INFORMATION
HEALTH 2
FLAMMABILITY 2
REACTIVITY 0
PROTECTION H

SECTION I -- PRODUCT IDENTIFICATION

PRODUCT NUMBER: S365 Prepared by: Chris Jansen
PRODUCT NAME: SOLVENT 365
CHEMICAL NAME: HYDROCARBON MIXTURE
CHEMICAL FORMULA: Not applicable; product is a mixture.
DOT CLASSIFICATION: COMBUSTIBLE LIQUID UN 1255

SECTION II -- HAZARDOUS INGREDIENTS

CHEMICAL/COMMON NAME	CAS NO.	OSHA PEL	ACGIH TLV	WT %
Hydrorefined Heavy Naphtha	64742-48-9	100 ppm	100 ppm	100

The components of this product are listed on the EPA/TSCA inventory of chemical substances.

* Indicates a reportable toxic chemical under SARA Title III Section 313

SECTION III -- PHYSICAL CHARACTERISTICS

BOILING POINT: 315-360 F	SPECIFIC GRAVITY: 0.791-0.919
VAPOR PRESSURE: 2.9 mm @ 20 C	% VOLATILE BY VOLUME: 100%
VAPOR DENSITY: HEAVIER THAN AIR	EVAPORATION RATE: SLOWER THAN ETHER

SOLUBILITY(SPECIFY SOLVENTS):

Soluble in most Ketones and Hydrocarbons; completely insoluble in water.

APPEARANCE AND ODOR:

Clear, water-white liquid with characteristic odor.

SECTION IV -- FIRE & EXPLOSION DATA

FLASH POINT: 104 DEG F ESTIMATED EXPLOSIVE LIMIT RANGE IS: LEL:1.0 UEL:6.0

EXTINGUISHING MEDIA:

foam, carbon dioxide, dry chemical.

SPECIAL FIREFIGHTING PROCEDURES

The use of SCBA is recommended for firefighters. Water spray may be used to cool containers exposed to heat or flame.

SOLVENT 365

REACTIVITY: Product is stable.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID:

(This product is incompatible with strong acids or bases, oxidizers, alkali metals, and halogens.

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition may yield carbon monoxide and carbon dioxide.

SECTION V -- HEALTH HAZARD DATA

ACUTE HEALTH EFFECTS:

EYE CONTACT: Material is a severe eye irritant. Direct contact with the liquid or exposure to vapors or mists may cause stinging, tearing, redness, swelling and eye damage.

INHALATION: Breathing high concentrations of vapors or mists may cause irritation of the nose or throat and signs of nervous system depression.

INGESTION: Ingestion of excessive quantities may cause irritation of the digestive tract, and signs of nervous system depression(headache, drowsiness, dizziness, loss of coordination, and fatigue).

SKIN CONTACT: This material is a skin irritant. Direct contact may cause redness or burning, drying and cracking of the skin.

EMERGENCY FIRST AID PROCEDURES:

EYE CONTACT: Flush with clean water for at least fifteen minutes. If irritation persists, get medical attention.

INHALATION: Move individual to fresh air. If breathing has stopped, apply artificial respiration. Get medical attention.

INGESTION: DO NOT INDUCE VOMITING or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is unconscious, place on the left side with the head down. Get medical attention immediately.

SKIN CONTACT: Wash affected area with soap and water. If irritation persists, get medical attention.

CHRONIC HEALTH EFFECTS:

Laboratory studies have shown that petroleum distillates may cause kidney, liver, or lung damage. Reports have associated repeated and prolonged over-exposure to solvents with permanent brain and nervous system damage.

Not listed as a carcinogen by the NTP, IARC, or OSHA.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Existing lung or skin conditions may be aggravated by repeated exposure.

SECTION VI -- SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS SPILLED OR RELEASED:

Remove all sources of ignition and provide ventilation. Soak up spill with absorbent material.

SOLVENT 365

WASTE DISPOSAL METHOD: Incinerate or dispose of waste material in accordance with all local, state, and federal requirements.

SECTION VII -- SPECIAL PROTECTION DATA

RESPIRATORY PROTECTION:

Wear NIOSH-approved respirator when the airborne concentration of this product exceeds the Threshold Limit Value (TLV).

VENTILATION:

Provide exhaust ventilation sufficient to keep the airborne concentration of this product below its exposure limits. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

PROTECTIVE GLOVES:

Neoprene or rubber if prolonged skin contact is likely.

EYE PROTECTION:

Goggles or full face shield if eye contact is likely.

SECTION VIII -- STORAGE & HANDLING DATA

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Store away from heat, sparks, and open flame. Keep containers tightly closed when not in use. Ground and bond all equipment when transferring from one container to another. Do not weld, cut, grind, solder, or drill on or near empty containers. Empty containers may contain explosive concentrations of product vapors.

OTHER PRECAUTIONS:

Product emits vapors which are heavier than air and may travel long distances. **KEEP OUT OF REACH OF CHILDREN.** Use good personal hygiene when handling this product. Wash hands after use, before smoking, eating, or using the toilet.

UNUSUAL FIRE AND EXPLOSION DATA

When heated above the flash point, this material emits flammable vapors which, when mixed with air, can burn or be explosive. Fine mists or sprays may be flammable at temperatures below the flash point.

THIS MSDS MEETS THE REQUIREMENTS OF CFR 1910.1200 OSHA HAZARD COMMUNICATION STANDARD.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE ACCURATE. HOWEVER, PRIESTLEY OIL CHEMICAL MAKES NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. PRIESTLEY OIL CHEMICAL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.



CLEAN ACROSS AMERICA AND
THROUGHOUT THE WORLD™

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301

ASHGROVE CEMENT WEST INC (366)
13939 N RIVERGATE BLVD
PORTLAND, OR 97203

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

12/21/96

ISSUE DATE: 10/30/92
SUPERSEDES: 04/23/90
ZEP SPIRIT

PRODUCT NO.: 0676

Cleaner - Disinfectant - Deodorant

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(770) 439-4200

(770) 432-2873

(770) 424-4789

(770) 392-1480

(770) 455-8160

(770) 552-8836

NON-OFFICE HOURS, WEEKENDS
AND HOLIDAYS, PLEASE CALL YOUR
LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(770) 922-0923

CHEMTREC:

1-800-424-9300

TOLL-FREE - ALL CALLS RECORDED

DISTRICT OF COLUMBIA:

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

@ * ETHYLENE GLYCOL MONOBUTYL ETHER * 2-butoxyethanol; butyl cellosolve; CAS # 111-76-2; RTECS # KJ8575000;
OSHA PEL (SKIN)- 25 ppm

TLV
(PPM)
25

EFFECTS
(SEE REVERSE)
TOX IRR CBL

% IN
PROD.
<5

@ Identifies chemicals listed under SARA-Section 313 for release reporting

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product, particularly in its concentrated form, may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or blistering. Overexposure by inhalation may cause respiratory irritation. Exposure may aggravate existing skin disorders such as dermatitis.

Chronic Effects of Overexposure:

Repeated or prolonged skin contact may produce chronic inflammation or dermatitis, characterized by redness, scaling or itching. Animal studies indicate a potential for liver, kidney, or red blood cell damage. Relevance of these studies or exposure levels which might produce these effects in humans has not been established. None of the hazardous ingredients are listed as carcinogens by IARC, NTP, & OSHA

Est'd PEL/TLV: Not established

Primary Routes of Entry: Inh, Skin.

HMS Codes: HEALTH 2; FLAM. 0; REACT. 0; PERS. PROTECT. B; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

Skin: Flush contaminated skin with plenty of water. Consult a physician if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once.

Inhale: Move exposed person to fresh air. If irritation persists, get medical attention promptly.

Ingest: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing: Wear nitrile gloves or use gloves with demonstrated resistance to the ingredients in this product.

Eye Protection: Wear splash-proof safety goggles especially if contact lenses are worn.

Respiratory Protection: No extra measures are needed if ventilation is adequate.

Ventilation: Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

Boiling Point (°F): ~ 220

Specific Gravity: 1.0

Vapor Pressure (mmHg): N/A

N/A

Percent Volatile by Volume (%): ~ 93

Vapor Density (air = 1): N/A

Evaporation Rate (WATER = 1): 1.0

1.0

Solubility in Water: MISCIBLE

pH (concentrate): 9.0-9.5

pH (use dilution of): N/A

N/A

Appearance and Odor: CLEAR, GREEN LIQUID WITH A VERY PLEASANT ODOR

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used): None (TCC)

Flammable Limits: LEL N/A UEL N/A

Extinguishing Media: Noncombustible.

Special Fire Fighting: Fire exposed drums should be cooled with stream of water.

Unusual Fire Hazards: Wear self-contained positive pres. breathing apparatus.

SECTION VII - REACTIVITY DATA

Stability: Stable
Incompatibility (avoid): Heat, sunlight, strong oxidizers, and acids.
Polymerization: Will not occur.
Hazardous Decomposition: Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer. Thoroughly rinse spill area with water.

Waste Disposal Method:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps. between 40-120 degrees F. Keep product away from skin and eyes. Do not breathe spray mists or vapors. Clothing or shoes which become contaminated with substance should be removed promptly and not worn until thoroughly cleaned. Keep out of the reach of children.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME Small sizes one gallon or less may be shipped as ORM-D: NONE

DOT Hazard Class: N/A

DOT I.D. Number: N/A

DOT Label/Placard: NONE

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container) : NONE

NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

**TERMS AND ABBREVIATIONS USED IN THE MSDS:
BY SECTION ALPHABETICALLY:****SECTION II: HAZARDOUS INGREDIENTS**

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.

CAS #: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).

DESIGNATIONS: Chemical and common names of hazardous ingredients.

EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling limits).

ACGIH: American Conference of Governmental Industrial Hygienists.

CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit- A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure limits.

(S) SKIN: Skin contact with substance can contribute to overall exposure.

STEL: Short Term Exposure Limit- Maximum concentration

for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBI: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX: Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this product.

N/D: Not Determined - Insufficient information for a determination for this item.

RTECS#: Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.

SARA: Superfund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated exposure.

TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.

ESTD PEL/TLV: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of vapors.

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: It refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)

PERCENT VOLATILE: The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure.

SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition or fire.

INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing excess pressure and heat.

STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act

RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.

TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)

Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON Hydraulic Oil AW ISO 46

CPS255674

Page 1 of 7

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting

PRIESTLEY OIL & CHEMICAL 3746534
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
BULK LUBE OIL PICK-UP WB
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: October 08, 1992

1. PRODUCT IDENTIFICATION

CHEVRON Hydraulic Oil AW ISO 46

PRODUCT NUMBER(S): CPS255674
PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID MEASURES

EMERGENCY NUMBER (24 hr): (800)457-2022 or (510)233-3737 (International)

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This substance may be irritating if inhaled. Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing. This hazard evaluation is based on data from similar materials.

INGESTION:

Revision Number: 1

Revision Date: 06/04/92

MSDS Number: 004614

NDA - No Data Available

NA - Not Applicable

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE FIGHTING MEASURES

SPECIAL NOTES: Leaks/ruptures in high pressure systems using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

FLASH POINT: (COC) >392F (200C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur and phosphorus. Incomplete combustion can produce carbon monoxide.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

Revision Number: 1

Revision Date: 06/04/92

MSDS Number: 004614

NDA - No Data Available

NA - Not Applicable

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

7. PHYSICAL AND CHEMICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Pale yellow liquid.

BOILING POINT: NA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 41.4 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

Revision Number: 1

Revision Date: 06/04/92

MSDS Number: 004614

NDA - No Data Available

NA - Not Applicable

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Hydraulic Oil AW ISO 46

CONTAINING

> 99.0 % LUBRICATING BASE OIL
5 mg/m3 mist ACGIH TWA
10 mg/m3 mist ACGIH STEL
5 mg/m3 mist OSHA TWA

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

< 1.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	NO
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

Revision Number: 1	Revision Date: 06/04/92	MSDS Number: 004614
NDA - No Data Available	NA - Not Applicable	

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TWA	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TWA	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING	30=Chevron STEL	

The following components of this material are found on the regulatory lists indicated.

LUBRICATING BASE OIL

is found on lists: 14,15,17,

11. TOXICOLOGICAL INFORMATION

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

Revision Number: 1

Revision Date: 06/04/92

MSDS Number: 004614

NDA - No Data Available

NA - Not Applicable

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1

Revision Date: 06/04/92

MSDS Number: 004614

NDA - No Data Available

NA - Not Applicable

Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON ATF DEXRON

CPS226502

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3746534
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
BULK LUBE OIL PICK-UP WB
FOB WILLERIDGE
PORTLAND, OR 97210

Print Date: October 13, 1992

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to reflect name change from "CHEVRON Automatic Transmission Fluid (DEXRON)" to "CHEVRON ATF DEXRON".

1. PRODUCT IDENTIFICATION

CHEVRON ATF DEXRON

PRODUCT NUMBER(S): CPS226502
PRODUCT INFORMATION: (800)582-3835

Revision Number: 18 Revision Date: 02/08/92 MSDS Number: 000021
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

X-DOS051 (06-89)

Appendix33-001107

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 18**Revision Date: 02/08/92****MSDS Number: 000021****NDA - No Data Available****NA - Not Applicable**

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 160C (320F) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Alcohol Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

Revision Number: 18

Revision Date: 02/08/92

MSDS Number: 000021

NDA - No Data Available

NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Red liquid.

BOILING POINT: NDA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.89 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 35.3 cst @ 40c

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Protective Equipment. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 18	Revision Date: 02/08/92	MSDS Number: 000021
NDA - No Data Available	NA - Not Applicable	

100.0 % CHEVRON ATF DEXRON

CONTAINING

> 85.0 % LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING

CAS64742525 DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC
5 mg/m3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

CAS64742536 DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC
5mg/m3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

CAS64742547 DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
5mg/3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

CAS64742650 DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
5 mg/m3 mist ACGIH TLV
10 mg/m3 mist ACGIH STEL
5 mg/m3 mist OSHA TWA

< 15.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory
lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC
is found on lists: 14,15,17,
DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC

Revision Number: 18	Revision Date: 02/08/92	MSDS Number: 000021
NDA - No Data Available	NA - Not Applicable	

is found on lists: 14,15,17,
DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
is found on lists: 14,15,17,
DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
is found on lists: 14,15,17,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

Revision Number: 18	Revision Date: 02/08/92	MSDS Number: 000021
NDA - No Data Available	NA - Not Applicable	

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 18 Revision Date: 02/08/92 MSDS Number: 000021
NDA - No Data Available NA - Not Applicable

MONSANTO MATERIAL SAFETY DATA

MONSANTO PRODUCT NAME
ROUNDUP® HERBICIDE

MONSANTO COMPANY
800 N. LINDBERGH
ST. LOUIS, MO. 63167
EMERGENCY PH. NO. (CALL COLLECT) (314) 694-4000
DATE PREPARED: November, 1992

PRODUCT IDENTIFICATION

EPA Registration Number: 524-445
Synonyms: None
Chemical Name: Not Applicable, Formulated Product
Active Ingredient: *Glyphosate, N-(phosphonomethyl) glycine, in the form of its isopropylamine salt 41.0%
Inert Ingredients: 59.0%
100.0%
*Contains 480 grams per liter or 4 pounds per gallon of the active ingredient glyphosate in the form of its isopropylamine salt. Equivalent to 356 grams per liter or 3 pounds per U.S. gallon of the acid, glyphosate.
CAS Reg. No.: Not Applicable, Formulated Product
CAS Reg. No. Active Ingredient: 1071-83-6
DOT Proper Shipping Name: Not Applicable
DOT Hazard Class/I.D. No.: Not Applicable
DOT Label: Not Applicable
Reportable Quantity (RQ) Under CERCLA: Not Applicable
U.S. Surface Freight Classification: Weed killing compound, N.O.I.B.N.

SARA Hazard Notification

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): Immediate

Section 313 Toxic Chemical(s): Not Applicable

Hazardous Chemical(s) Under OSHA Hazard Communication Standard:

This product contains, as components, the substances listed below which are identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200):
Ethoxylated Tallowamines, CAS Reg. No. 61791-26-2

WARNING STATEMENTS

Keep out of reach of children.

WARNING!

CAUSES SUBSTANTIAL BUT TEMPORARY EYE INJURY

HARMFUL IF INHALED.

REFORMULATION IS PROHIBITED

SEE INDIVIDUAL CONTAINER LABEL FOR REPACKAGING LIMITATIONS

PRECAUTIONARY MEASURES

- Do not get in eyes or breathe spray mist or get in or on clothing.
- Wear goggles, face shield or safety glasses.
- Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.
- Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark.
- Do not contaminate water when disposing of equipment washwaters.

EMERGENCY AND FIRST AID PROCEDURES

FIRST AID:

- If In Eyes:** Hold eyelids open and flush with plenty of water. Get medical attention.
- If Swallowed:** Drink promptly a large quantity of milk, egg whites, or gelatin solution. If these are not available, drink large quantities of water. Get medical attention.
- If Inhaled:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.
- NOTE:** For additional human emergency first aid or treatment guidance, call collect, anytime, day or night (314) 694-4000.

OCCUPATIONAL CONTROL PROCEDURES

- Eye Protection:** Wear chemical splash goggles during mixing/pouring operations or other activities in which eye contact with undiluted ROUNDUP® herbicide is likely to occur.
- Skin Protection:** ROUNDUP® herbicide does not present significant skin concern requiring special protection.
- Respiratory Protection:** For Handling of the Undiluted Product: Undiluted ROUNDUP® herbicide is not likely to present an airborne exposure concern during normal handling. In the event of an accidental discharge of the material during manufacture or handling which produces a heavy vapor or mist, workers should put on respiratory protection equipment. Consult respirator manufacturer to determine appropriate type of equipment. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer.
- For Application of Product Diluted in accordance with label instructions: Respirators are not required for applications of use - dilutions of ROUNDUP® herbicide.
- Ventilation:** No special precautions are recommended.
- Airborne Exposure Limits:**
- Product:** ROUNDUP® herbicide - 100% by wt.:
OSHA PEL: None established ACGIH TLV: None established
- Ethoxylated Tallowamine:**
OSHA PEL: None established ACGIH TLV: None established

FIRE PROTECTION INFORMATION

- Flash Point:** >200°F **Method:** Pensky-Martens
- Extinguishing Media:** Water spray, foam, dry chemical, CO₂, or any class B extinguishing agent.
- Special Firefighting Procedures:** Firefighters or others who may be exposed to vapors, mists or products of combustion should wear a self-contained breathing apparatus. Equipment should be thoroughly cleaned after use.
- Unusual Fire and Explosion Hazards:** None

REACTIVITY DATA

- Stability:** Stable for at least 5 years under normal conditions of warehouse storage.
- Incompatibility:** Spray solutions of this product should be mixed, stored or applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined containers.
- DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.
- Hazardous Decomposition Products:** None
- Hazardous Polymerization:** Does not occur. This product can react with caustic (basic) materials to liberate heat. This is not a polymerization but rather a chemical neutralization in an acid base reaction.

HEALTH EFFECTS SUMMARY

The following information summarizes human experience and results of scientific investigations reviewed by health professionals for hazard evaluation of ROUNDUP® herbicide and development of Precautionary Statements and Occupational Control Procedures recommended in this document.

EFFECTS OF EXPOSURE

Skin contact and inhalation are expected to be the primary routes of occupational exposure to ROUNDUP® herbicide. Although limited occupational exposure to this material has not been reported to produce significant adverse health effects, ROUNDUP® herbicide is considered, on the basis of single exposure (acute) animal tests, to be slightly to moderately irritating to eyes. Ingestion of similar formulations has been reported to produce gastrointestinal discomfort with irritation of the mouth, nausea, vomiting and diarrhea. Oral ingestion of large quantities of one similar product has been reported to result in hypotension and lung edema.

TOXICOLOGICAL DATA

Data from laboratory studies conducted by Monsanto with ROUNDUP® herbicide are summarized below:

Single exposure (acute) studies indicate:

Oral -	Practically non-toxic, (Rat LD ₅₀ , >5,000 mg/Kg)
Dermal -	Practically non-toxic, (Rabbit LD ₅₀ , >5000 mg/Kg)
Inhalation -	Slightly toxic, (Rat 4-hr LC ₅₀ , ~2.6 mg/L)
Eye Irritation -	Slightly to moderately irritating, (Rabbit)
Skin Irritation -	Essentially non-irritating (Rabbit, 4 hr. exposure)

No skin allergy was observed in guinea pigs following repeated skin exposure.

COMPONENTS

Data from laboratory studies conducted by Monsanto and from the scientific literature on components of ROUNDUP® herbicide:

Isopropylamine Salt of Glyphosate

Data from studies with a formulation comprised of 62% isopropylamine salt of glyphosate (MON 0139) indicate the following:

In repeat dosing studies (6-month), dogs fed MON 0139 exhibited slight body weight changes. Following repeated skin exposure (3-week) to MON 0139, skin irritation was the primary effect in rabbits.

Additional toxicity information is available on glyphosate, the active herbicidal ingredient of MON 0139. Following repeated exposures (90-days) to glyphosate in their feed, decreased weight gains were noted at the highest test level in mice, while no treatment-related effects occurred in rats. Following repeated skin exposure (3 weeks) to glyphosate, slight skin irritation was the primary effect observed in rabbits. No skin allergy was observed in guinea pigs following repeated skin exposure. There was no evidence of effects on the nervous system, including delayed effects in chickens (repeat oral doses) or cholinesterase inhibition in rats (single oral doses). Reduced body weight gain and effects on liver tissues were observed with long-term (2-year) feeding of glyphosate to mice at high dose levels. Reduced body weight gain and eye changes were observed at the high dose level in one long-term (2 year) feeding study with rats, while no treatment-related effects occurred in a second study. No adverse effects were observed in feeding studies with dogs. Glyphosate did not produce tumors in any of these studies. Based on the results from the chronic studies, EPA has classified glyphosate in category E (evidence of non-carcinogenicity for humans). No birth defects were noted in rats and rabbits given glyphosate orally during pregnancy, even at amounts which produced adverse effects on the mothers. Glyphosate was fed continuously to rats at very high dose levels for 2 successive generations. Toxicity was reported in offspring from the high dose, a level which also produced adverse effects on the mothers. In a 3 generation study conducted at lower dose levels, no effects were seen on the ability of male or female rats to reproduce. Glyphosate has produced no genetic changes in a variety of standard tests using animals and animal or bacterial cells.

Nonoxylated Fatty Amine

The surfactant component of ROUNDUP® herbicide is reported to cause irritation to the eyes and skin and may contribute to the irritation potential reported for this herbicide. Ingestion may produce gastrointestinal irritation, nausea, vomiting and diarrhea.

PHYSICAL DATA

Appearance:	clear, viscous amber-colored solution
Odor:	practically odorless to slight amine-like odor
pH:	4.7 (1% solution)
Specific Gravity:	1.17 (Water = 1)

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

SPILL, LEAK & DISPOSAL INFORMATION

SPILL/LEAK:

Observe all protection and safety precautions when cleaning up spills -- see Occupational Control Procedures.

Liquid spills on floor or other impervious surfaces should be contained or diked, and should be absorbed with attapulgite, bentonite or other absorbent clays. Collect contaminated absorbent, place in plastic-lined metal drum and dispose of in accordance with instructions provided under DISPOSAL. Thoroughly scrub floor with a strong industrial type detergent solution and rinse with water.

Liquid spills that soak into the ground should be dug-up, placed in plastic-lined metal drums and disposed of in accordance with instructions provided under DISPOSAL.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a plastic-lined drum or other non-leaking container. Dispose of leaking container in accordance with instructions provided under DISPOSAL. Any recovered spilled liquid should be similarly collected and disposed of.

Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

DISPOSAL:

Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. **DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.**

Metal Drums: Triple rinse container. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Metal Bulk: Triple rinse emptied bulk containers. Then offer for recycling or reconditioning or disposal in a manner approved by state and local authorities.

Plastic Drums and mini bulk: Do not reuse container. Return container per the Monsanto container return program. If not returned, triple rinse container, then puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed, by state and local authorities, by burning. If burned, stay out of smoke.

DATE: November, 1992

SUPERSEDES: February, 1992

MSDS NO.: S00012114
(previously M00007588)

FOR ADDITIONAL NON-EMERGENCY INFORMATION, CALL: 1-800-332-3111

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Monsanto Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Monsanto Company be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON DELO Heavy Duty Motor Oil SAE 30

CPS238155

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: December 15, 1992

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to update Sections 9 (Composition Comment) and 10 (DOT Information).

1. PRODUCT IDENTIFICATION

CHEVRON DELO Heavy Duty Motor Oil SAE 30

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER
OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS238155

PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

X-DOS051 (06-89)

Appendix33-001118

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457
NDA - No Data Available NA - Not Applicable

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 419F (210C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

CAUTION! Do not use pressure to empty drum or explosion may result. DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

Revision Number: 1

Revision Date: 12/27/90

MSDS Number: 004457

NDA - No Data Available

NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark brown liquid.

BOILING POINT: NA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 10.6 cSt @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 1

Revision Date: 12/27/90

MSDS Number: 004457

NDA - No Data Available

NA - Not Applicable

100.0 % CHEVRON DELO Heavy Duty Motor Oil SAE 30

CONTAINING

> 80.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 20.0 % ADDITIVES INCLUDING THE FOLLOWING

< 2.0 % BUTYL BENZYL PHTHALATE
CAS85687 A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
CERCLA 302.4 RQ=100 POUNDS

< 1.5 % ZINC ALKYL DITHIOPHOSPHATE
CAS68649423 A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

ZINC ALKYL DITHIOPHOSPHATE

is found on lists: 01,10,11,

BUTYL BENZYL PHTHALATE

is found on lists: 01,10,11,12,26,28,

REGULATORY LISTS SEARCHED:

Revision Number: 1

Revision Date: 12/27/90

MSDS Number: 004457

NDA - No Data Available

NA - Not Applicable

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains butyl benzyl phthalate. In a cancer bioassay conducted by the National Toxicology Program (NTP), mice and rats were given butyl benzyl phthalate in their diets. All groups of male rats were terminated at six months due to excessive mortality. Female rats showed an increase in cancer but both sexes of mice did not. This study has been declared invalid and is being repeated by NTP.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457
NDA - No Data Available NA - Not Applicable

Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457
NDA - No Data Available NA - Not Applicable

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REvised:12/30/92

***** I. PRODUCT IDENTIFICATION *****

MOBIL DTE 13M

SUPPLIER: 24-HOUR EMERGENCY (CALL COLLECT):
 MOBIL OIL CORP. (609) 737-4411

CHEMICAL NAMES AND SYNONYMS: CHEMTREC:
 PET. HYDROCARBONS AND ADDITIVES (800) 424-9300

USE OR DESCRIPTION: PRODUCT AND MSDS INFORMATION:
 HYDRAULIC OIL (800) 662-4525

***** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES *****

APPEARANCE: Amber Liquid ODOR: Mild PH: NA

VISCOSITY AT 40 C, CS: > 31.6

VISCOSITY AT 100 C, CS: 6.5

FLASH POINT F(C): > 330(166) (ASTM D-92)

MELTING POINT F(C): NA POUR POINT F(C): -40(-40)

BOILING POINT F(C): > 600(316) VOC: < 5.00(Wt. %); 0.366 lbs/gal

RELATIVE DENSITY, 15/4 C: 0.877 SOLUBILITY IN WATER: Negligible

VAPOR PRESSURE-mm Hg 20C: < .1

NA=Not Applicable NE=Not Established D=Decomposes

FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

***** III. POTENTIALLY HAZARDOUS INGREDIENTS *****

None

SEE SECTIONS XII AND XIII FOR REGULATORY AND FURTHER COMPOSITIONAL DATA.

***** IV. HEALTH HAZARD DATA *****

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---

THRESHOLD LIMIT VALUE: 5.00 mg/m3 Suggested for Oil Mist

EFFECTS OF OVEREXPOSURE: Slight skin irritation.

***** V. EMERGENCY AND FIRST AID PROCEDURES *****

--- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: Flush thoroughly with water. If irritation persists, call a physician.

SKIN CONTACT: Wash contact areas with soap and water. High pressure accidental injection through the skin requires immediate medical attention for possible incision, irrigation and/or debridement.

INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance and call a physician. If breathing has stopped, use mouth to mouth resuscitation.

INGESTION: Not expected to be a problem. However, if greater than 1/2 liter(pint) ingested, immediately give 1 to 2 glasses of water and call a physician, hospital emergency room or poison control center for assistance. Do not induce vomiting or give anything by mouth to an unconscious person.

***** VI. FIRE AND EXPLOSION HAZARD DATA *****

FLASH POINT F(C): > 330(166) (ASTM D-92)

FLAMMABLE LIMITS. LEL: .6% UEL: 7.0%

EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical and water fog.

SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing.

Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. For fires in enclosed areas, firefighters must use self-contained breathing apparatus. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

NFPA HAZARD ID: Health: 0, Flammability: 1, Reactivity: 0

***** VII. REACTIVITY DATA *****

STABILITY (Thermal, Light, etc.): Stable

CONDITIONS TO AVOID: Extreme heat.

INCOMPATIBILITY (Materials to Avoid): Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.

***** VIII. SPILL OR LEAK PROCEDURE *****

ENVIRONMENTAL IMPACT: Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.

WASTE MANAGEMENT: Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at any government approved waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

***** IX. SPECIAL PROTECTION INFORMATION *****

EYE PROTECTION: Normal industrial eye protection practices should be employed.

SKIN PROTECTION: No special equipment required. However, good personal hygiene practices should always be followed.

RESPIRATORY PROTECTION: No special requirements under ordinary conditions of use and with adequate ventilation.

VENTILATION: Use in well ventilated area.

***** X. SPECIAL PRECAUTIONS *****

No special precautions required.

***** XI. TOXICOLOGICAL DATA *****

---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Slightly toxic ---Based on testing of similar products and/or the components.

DERMAL TOXICITY (RABBITS): Slightly toxic ---Based on testing of similar products and/or the components.

INHALATION TOXICITY (RATS): Not established

EYE IRRITATION (RABBITS): Expected to be non-irritating. ---Based on testing of similar products and/or the components.

SKIN IRRITATION (RABBITS): May cause slight irritation on prolonged or repeated contact. ---Based on testing of similar products and/or the components.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Severely solvent refined and severely hydrotreated mineral base oils have been tested at Mobil Environmental and Health Sciences Laboratory by dermal application to rats 5 days/week for 90 days at doses significantly higher than those expected during normal industrial exposure. Extensive evaluations including microscopic examination of internal organs and clinical chemistry of body fluids, showed no adverse effects.

---CHRONIC TOXICOLOGY (SUMMARY)---

The base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of similar oils showed no evidence of carcinogenic effects.

***** XII. REGULATORY INFORMATION *****

GOVERNMENTAL INVENTORY STATUS: All components registered in accordance with TSCA.

Transport Information:

DOT:

Shipping Name: Not applicable

Hazard Class: Not applicable

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined not to be hazardous.

RCRA INFORMATION: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III: This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312 - FORMERLY 302) REPORTABLE HAZARD CATEGORIES: None

This product contains no chemicals reportable under SARA (313) toxic release program.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

--- REGULATORY LISTS SEARCHED ---

CARC = CARCINOGEN; SUS = SUSPECTED CARCINOGEN

***** XIII. INGREDIENTS *****

ADDITIVE COMPONENTS:

ACRYLATE POLYMERS	<	7.00	
2-PROPENOIC ACID, 2-METHYL-, DODECYL ESTER, POLYMER WITH METHYL 2- METHYL-2-PROPENOATE AND TETRADECYL 2-METHYL-2-PROPENOATE	<	5.00	68171-50-6
ZINC CONTAINING ALKYL AMIDES	0.65	NJT	003066009-5099P
ZINC DIALKYL DITHIOPHOSPHATES	0.63		68988-46-5

MAY CONTAIN ONE OR MORE OF THE FOLLOWING < 2.00
COMPONENTS EACH OF WHICH IS PRESENT AT
LESS THAN ONE PERCENT:

DISTILLATES (PETROLEUM), SOLVENT-
REFINED HEAVY PARAFFINIC
LUBRICATING OILS (PETROLEUM), C15-30
HYDROTREATED NEUTRAL OIL-BASED,
CONTG. SOLVENT DEASPHALTED
RESIDUAL OIL
LUBRICATING OILS (PETROLEUM), C20-50,
HYDROTREATED NEUTRAL OIL-BASED
HIGH-VISCOSITY
DISTILLATES (PETROLEUM), SOLVENT-REFINED
LIGHT NAPHTHENIC
CALCIUM SULFONATES
ALKYL PHENOLS
POLYOLEFIN ACID, SALT
POLYOLEFIN AMIDE ALKENEAMINE
POLYOLEFIN
POLYALKYL METHACRYLATE
KEROSENE
DISTILLATES (PETROLEUM), SOLVENT-
DEWAXED LIGHT PARAFFINIC
DIALKYL FUMERATE/VINYL ACETATE POLYMER
ORGANOSILICONE FLUID

***** APPENDIX *****
FOR MOBIL USE ONLY: MHC: 1* 1* NE 0* 1*, MPPEC: A, PPEC: , US92-681
APPROVE CCODE:10 10/20/92 REQ: US - MARKETING

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT
WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR
PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT
ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL
WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF
MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE
USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A
RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING
LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING
PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (800) 227-0707 X3265



1420 Harbor Bay Parkway
Suite 210
Alameda, California 94501
800-548-8381

MATERIAL SAFETY DATA SHEET

FLEISCHMANN'S VINEGAR

Date Issued: September 3, 1992
Trade Name: Vinegar, All Varieties
Chemical Name: Acetic Acid
Chemical Formula: CH_3COOH
Definition: Product made by the acetic fermentation of ethyl alcohol and contains 5 to 30% acetic acid (or 50 to 300 grain vinegar).

Manufacturer's Name and Address: Integrated Ingredients
1420 Harbor Bay Parkway, Suite 210
Alameda, CA 94501
800-548-8381

Phone Number:

HEALTH HAZARD DATA

Inhalation: Threshold Limit Value: 10 ppm
Short Term Exposure Limit: 15 ppm for 15 minutes
Odor Threshold: 1.0 ppm

Inhalation of vapors can cause irritation to respiratory tract.

Skin: Contact may cause mild injury and burns from vinegars of 10% acetic acid and greater. Dilute solutions may cause dermatitis in some sensitive individuals.

Eyes: Contact may cause severe burns and permanent corneal injury from concentrated vinegars. May be followed by blindness. High vapor concentrations may result in conjunctivitis.

Ingestion: Concentrated vinegars may cause pain, irritation and burns in mouth, esophagus and stomach.

EMERGENCY & FIRST-AID PROCEDURES

In case of eye or skin contact, flush immediately and thoroughly with water.
Saturated clothing should be removed and washed.
If vapors are inhaled extensively, exposed person should be removed to fresh air immediately.
If swallowed, water should be consumed to dilute.
Do not induce vomiting.
Do not give emetics or baking soda.
Call a physician.

FIRE AND EXPLOSION HAZARD DATA

Flash Point: 40°C closed cup
(Acetic Acid)
Auto Ignition Temperature: 427°C
(Acetic Acid)
Flammable Limits in Air: 4.0% - 16%
(Acetic Acid)

Fire Extinguishing Agents Recommended:
Water spray, foam CO_2 or dry chemical. Water may be used to dilute spills and reduce flammability.

Unusual fire and explosion hazards:
Toxic gases and vapors may be released in a fire involving concentrated vinegars.



Fleischmann's
Vinegar

Memo
Fleischmann's

Pure Culture
Products

Spice
Islands

MATERIAL SAFETY DATA SHEET

FLEISCHMANN'S VINEGAR REACTIVITY DATA

Stability

☒ Stable
☐ Unstable

Hazard Polymerization

☒ Will not occur
☐ May occur

Incompatibility:

Contact with strong oxidizers may cause fires and will react with strong caustics to cause violent spattering and heat.

Hazardous decomposition products:

-- May produce carbon monoxide (CO) and/or carbon dioxide (CO₂).

SPILL OR LEAK PROCEDURES

If vinegar is spilled, dike to contain, ventilate area, dilute with water: may be neutralized with addition of soda ash.

Do not flush to streams or sewers.

Waste Disposal Methods:

Treatment or disposal of waste generated by use of vinegar should be reviewed in terms of applicable federal, state and local laws and regulations. Users are advised to consult with appropriate regulatory agencies before discharge, treatment or disposal.

SPECIAL PROTECTION INFORMATION

Respiratory Protection:

As required to prevent exposure to concentrations which exceed the permissible level.

Ventilation:

Local exhaust recommended. Mechanical recommended.

Eyes and Face:

Safety glasses or plastic face shield required.

Hands, Arms, Body:

Rubber or neoprene gloves recommended.
Rubber apron or other protective equipment as required to reduce direct contact.

Other Equipment:

Eye wash station, safety shower.

PHYSICAL DATA

Appearance and Odor Appropriate color and odor for type of vinegar	Vapor Pressure (MM Hg) 11 MM	% Volatiles by Volume 100%	Specific Gravity 1.01 - 1.04
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Boiling Point
215°F @ 100 grain

pH
2.2 @ 100 grain

Solubility in Water
Complete

Vapor Density (Air=1)
2.1



(Rev 9/92)

Fleischmann's
Vinegar

Brand
Fleischmann's

Drug Culture
Products

Spice
Islands

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203
503-286-1677 • FAX: 289-2272

VENDOR: 00812642

ATTN MARY DeLONG
STEINFELD'S PRODUCTS CO.
P.O. BOX 4800
PORTLAND, OR 97208-4800

PURCHASE ORDER NO.

895504

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date Issued	8/18/95
Date Required	8/21/95
Terms	NET
Via	WILL CALL
Freight Terms	FOB: DESTINATION

This order is ☒ a confirmation ☐ not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	/ 192	GAL	10% WHITE VINEGAR, INDIAN SUMMER 120 GRAIN (DRUM=48 GL)* M.S.D.S. REQUIRED Supplier #: 120 GRAIN VINEGAR STEINFELD'S DRUM DEPOSIT = \$ 18 (for 6/24/95 8/21/95)	29-01-300		00-00-0420-0008	1.32
02	/ 4	EACH	DRUM DEPOSIT	99-99-999		08-73-6200-0000	18.00
03	/ 4	EACH	DRUM CREDIT (for 8/17/95)	99-99-999		08-73-6200-0000	18.00
** CONFIRMING PURCHASE ORDER--DO NOT DUPLICATE **							

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

ave

Howard E. Hackett

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072



IDENTITY (As Used on Label and List)

SC-575

Note: Blank spaces are not permitted. If any item is not applicable, or no
information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name
Apollo Chemical & Equipment Company

Address (Number, Street, City, State, and ZIP Code)

6647 NE 47th Avenue

Portland, Oregon 97218

Emergency Telephone Number

(800)367-4974

Telephone Number for Information

(503)249-8455

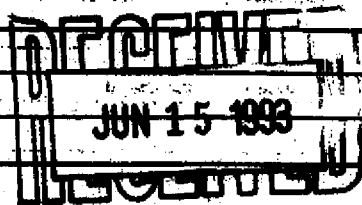
Date Prepared

Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
2-Butoxyethanol CAS #111-76-2	50	25		
Sodium Metasilicate CAS #6834-92-0		2mg/m ³ for powder only		

HMIS		0 = Minimal
Health	1	1 = Slight
Fire	2	2 = Moderate
Reactivity	0	3 = Serious
Specific Hazard	Combustible Liquid	4 = Severe



Section III — Physical/Chemical Characteristics

Boiling Point	About 210°	Specific Gravity (H ₂ O = 1)	1.016
Vapor Pressure (mm Hg.)	NA	Melting Point	N/A
Vapor Density (AIR = 1)	1.116	Evaporation Rate (Butyl Acetate = 1)	NA
Solubility in Water	Complete		

Appearance and Odor

Reddish Pink - Slight sour smell

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	165° F TCC	Flammable Limits	LEL	UEL
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Extinguishing Media

Water spray, dry chemical, chemical foam, carbon dioxide

Special Fire Fighting Procedures

Use self-contained breathing apparatus with full face piece

Unusual Fire and Explosion Hazards

None

(Reproduce locally)

OSHA 174, Sept. 1985

Revised January 2, 1993

Appendix33-001133

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	XX	Avoid repeated freeze and thaw cycles

Incompatibility (Materials to Avoid)

Acids, strong oxidizing agents

Hazardous Decomposition or Byproducts

Carbon monoxide and/or carbon dioxide

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	XX	

Section VI — Health Hazard Data

Routes of Entry:	Inhalation?	Skin?	Ingestion?
	X	X	X

Health Hazards (Acute and Chronic)

May cause eye or skin irritation. Ingestion may cause nausea or diarrhea. Ingestion may also cause irritation or burns to mouth, throat, and esophagus. Vapors or absorption of 2-Butoxyethanol through the skin may cause headache, dizziness, or nausea.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
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Contains no known or suspected carcinogens

Signs and Symptoms of Exposure

Medical Conditions

Generally Aggravated by Exposure Liver, kidney, blood disorders maybe aggravated

Emergency and First Aid Procedures

For overexposure to vapor move to fresh air. For contact with skin and eyes flush with plenty of water for 15 minutes. Eyes get prompt medical attention. Do not ingest.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

Evacuate unnecessary personnel, contain spill, ventilate area mop up and collect liquid and place in a DOT approved container

Safe Disposal Method

Dispose of in accordance with all federal, state, and local regulation

Precautions to Be Taken in Handling and Storing

Store in a cool, dry well ventilated place. Keep container tightly closed

Keep from freezing

Other Precautions

None normally required

Section VIII — Control Measures

Respiratory Protection (Specify Type)

Use MSHA or NIOSH approved respirator for organic vapors if TLV is exceeded.

Inhalation	Local Exhaust	Do not exceed TLV Values	Special
	Mechanical (General)		Other

Protective Gloves

Rubber Gloves

Eye Protection

Chemical Goggles

Other Protective Clothing or Equipment

None normally required

Decontamination Procedures

Follow recommendation in section VII safe handling and use and wash skin and clothing after contact

UNOCAL 76**MATERIAL SAFETY DATA SHEET**

Unocal Corporation
1201 West 5th Street
Los Angeles, California 90017

Product Name: 140 Solvent 66/3
Product Code: 11106

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 140 Solvent 66/3
Product Code: 11106
Synonyms: AMSCO Solv 1106
Generic Name: Volatile solvent
Chemical Family: Hydrocarbon mixture

Responsible Party: Unocal Petroleum Products and Chemicals Div.
Hydrocarbon Sales
1650 East Golf Road
Schaumburg, Illinois
60196-1088

For further information contact
8am - 4pm CST, Mon - Fri: 1-800-967-7601

EMERGENCY OVERVIEW**24 Hour Emergency Telephone Numbers:**For Transportation Emergencies

CHEMTREC

Cont. US: (800)424-9300

Alaska & Hawaii (collect):

(202)483-7616

Health Emergencies forUnocal/UNO-VEN Products:

Los Angeles Poison

Information Center

Cont. US: (800)356-3129

Outside US: (213)222-3212

Health Hazards: Causes skin irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. Keep container tightly closed. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

Physical Hazards: Combustible liquid and vapor. Keep away from heat, sparks, flames or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment).

- ▶ Physical Form: Liquid
- ▶ Appearance: Water White

Issue Date: 01/04/93
Revised Sections: New Format

Status: Final Revised

Product Name: 140 Solvent 66/3
Product Code: 11106

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► Odor: Characteristic hydrocarbon

NFPA HAZARD CLASS: Health: 1 (Slight)
Flammability: 2 (Moderate)
Reactivity: 0 (Least)

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS

EXPOSURE GUIDELINE

	Limits	Agency	Type
Stoddard Solvent	100 ppm	ACGIH	TWA
CAS# 8052-41-3	100 ppm	OSHA	TWA
	200 ppm	MSHA	TWA
	100 ppm	Cal.OSHA	TWA

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

Eye: Contact may cause mild eye irritation including stinging, watering and redness.

Skin: Skin irritant. Contact may cause redness, burning, drying and cracking of the skin and skin damage. No harmful effects from skin absorption have been reported.

Inhalation (Breathing): Expected to have a low degree of toxicity by inhalation.

Ingestion (Swallowing): Low degree of toxicity by ingestion.
ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Signs and Symptoms: Effects of overexposure may include irritation of the nose and throat, irritation of the digestive tract and signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination and fatigue).

Cancer: No data available.

Target Organs: Inadequate data available.

Developmental: Inadequate data available.

Other Comments: This product is sometimes used as a dry-cleaning

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solvent. Retained solvent in absorbent clothing (e.g., shoulder pads) that remains in contact with the skin for prolonged periods has caused severe skin irritation including redness, swelling, burns and severe skin damage. Care must be taken to ensure that garments cleaned with solvents are completely dry before being worn.

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage (sometimes referred to as Solvent or Painters' Syndrome). Intentional misuse by deliberately concentrating and inhaling this product may be harmful or fatal.

Medical Conditions: Conditions aggravated by exposure may include skin disorders and respiratory (asthma-like) conditions.

4. FIRST AID MEASURES

Eye: If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

Skin: Remove contaminated shoes and clothing and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops, seek medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious, place on the left side with the head down. If possible, do not leave victim unattended. Seek medical attention.

Issue Date: 01/04/93
Revised Sections: New Format

Status: Final Revised

Product Name: 140 Solvent 66/3
Product Code: 11106

UNOCAL

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5. FIRE FIGHTING MEASURES

Flammable Properties: Flash Point: 140°F (TCC)
OSHA Flammability Class: Combustible liquid
LEL: 1.0 / UEL: 7.0
Autoignition Temperature: 440°F

NEPA HAZARD CLASS

Health: 1 (Slight)
Flammability: 2 (Moderate)
Reactivity: 0 (Least)

HMIS HAZARD CLASS

Health: 2 (Moderate)
Flammability: 2 (Moderate)
Reactivity: 0 (Least)

Unusual Fire & Explosion Hazards: This material is combustible and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment). May create vapor/air explosion hazard if heated. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can explode in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, halon, foam or water spray is recommended. Water or foam may cause frothing of products heated above 212 °F. Halon may decompose into toxic products. Carbon dioxide can displace oxygen. Use caution when applying halon or carbon dioxide in confined spaces.

Fire Fighting Instructions: Emergency responders in the danger area should wear bunker gear and self contained breathing apparatus for fires beyond the incipient stage (29 CFR 1910.156). In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate damage area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from danger area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

6. ACCIDENTAL RELEASE MEASURES

Combustible. Keep all sources of ignition away from spill/release. Use non-sparking tools and explosion proof

Issue Date: 01/04/93
Revised Sections: New Format

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Product Name: 140 Solvent 66/3
Product Code: 11106

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equipment. Stay upwind and away from spill/release. Isolate danger area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8). Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Spilled material may be absorbed into an appropriate absorbent material. Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

7. HANDLING AND STORAGE

Handling: Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276. The use of respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8). Wash thoroughly after handling. Do not wear contaminated clothing or shoes. Use good personal hygiene practice.

"Empty" containers retain residue (liquid and/or vapor) and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this product, refer to Occupational Safety and Health Administration Regulations, ANSI Z49.1 and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

Storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well ventilated areas away from heat and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep away from any

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incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used.

Personal Protective Equipment (PPE):

Respiratory: The use of respiratory protection is advised when concentrations exceed the established exposure limits (see Section 2). Depending on the airborne concentration, use a respirator or gas mask with appropriate cartridges and cannisters (NIOSH approved, if available) or supplied-air equipment.

Skin: The use of gloves impermeable to the specific material handled is advised to prevent skin contact, possible irritation, and skin damage.

Eye/Face: Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended.

Other Protective Equipment: Eye wash and quick drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. It is recommended that impervious clothing be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm).

Flash Point: 140°F (TCC)

Flammable/Explosive Limits (%): LEL: 1.0 / UEL: 7.0

Autoignition Temperature: 440°F

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Burn Rate (solids only): No Data
Appearance: Water White
Physical State: Liquid
Odor: Characteristic hydrocarbon
pH: Not applicable
Vapor Pressure (mm Hg): 2
Vapor Density (air=1): 5.1
Boiling Point: 370-405°F
Freezing/Melting Point: No Data
Solubility in Water: Negligible
Specific Gravity: 0.772 (60°F/60°F)
Heat Value (BTU): 20,633
Volatile Organic Compounds (VOC) Content: 100%, 772 g/liter
Percent Volatile: 100 vol.%
Evaporation Rate (nBuAc=1): 0.08
Viscosity: 1.79 cst
Bulk Density: 6.55 lbs/gal @ 15°C
Molecular Weight: 155 g/mole

BENZENE = 2 ppm

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions of storage and handling.

Conditions To Avoid: Avoid all possible sources of ignition (see Sections 5 and 7).

Incompatible Materials: Avoid contact with strong oxidizing agents and reducing agents.

Hazardous Decomposition Products: Combustion can yield carbon dioxide and carbon monoxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

No definitive information available on carcinogenicity, mutagenicity, target organs or developmental toxicity.

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12. DISPOSAL CONSIDERATIONS

If discarded in its purchased form, this product would not be a RCRA hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a RCRA hazardous waste. (40 CFR 261.10-24).

State and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name / Technical Name: Naphtha, Solvent
Hazard Class or Division: Combustible liquid
ID #: UN1256

14. REGULATORY INFORMATION

This product contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

--None--

WARNING: This product contains the following chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

COMPONENT	EFFECT
Benzene 2 ppm	Cancer
Toluene	Developmental Toxicant

This product has not been identified as a carcinogen by NTP, IARC, or OSHA.

EPA (CERCLA) Reportable Quantity: --None--

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Status: Final Revised

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15. DOCUMENTARY INFORMATION

Issue Date: 01/04/93
Previous Issue Date: 06/14/92
Product Code: 11106
Previous Product Code: None

16. DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. However, no warranty of merchantability, fitness for any particular purpose, or any other warranty is expressed or is to be implied regarding the accuracy or completeness of this information the results to be obtained from the use of this information or the product, the safety of this product, or the hazards related to its use. This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

Issue Date: 01/04/93
Revised Sections: New Format

Status: Final Revised



Material Safety Data Sheet

CHEVRON RPM Universal Gear Lubricant SAE 85W-140

CPS225039

Page 1 of 6

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting

PRIESTLEY OIL & CHEMICAL 3907475

MATERIAL ORDERED FOR:

CO., INC.

PACKAGE PICK-UP W.B.

P O BOX 12570

FOB WILLBRIDGE

PORTLAND, OR 97212

PORTLAND, OR 97210

Print Date: January 08, 1993

1. PRODUCT IDENTIFICATION

CHEVRON RPM Universal Gear Lubricant SAE 85W-140

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER
OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS225039

PRODUCT INFORMATION: (800)582-3835

Revision Number: 0

Revision Date: 12/19/90

MSDS Number: 004553

NDA - No Data Available

NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 0

Revision Date: 12/19/90

MSDS Number: 004553

NDA - No Data Available

NA - Not Applicable

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 410F (210C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 0

Revision Date: 12/19/90

MSDS Number: 004553

NDA - No Data Available

NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark green liquid.

BOILING POINT: NDA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.91 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 24 cSt @ 100C Min.

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 0

Revision Date: 12/19/90

MSDS Number: 004553

NDA - No Data Available

NA - Not Applicable

100.0 % CHEVRON RPM Universal Gear Lubricant SAE 85W-140

CONTAINING

> 90.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 10.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

Revision Number: 0	Revision Date: 12/19/90	MSDS Number: 004553
NDA - No Data Available	NA - Not Applicable	

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004553
NDA - No Data Available NA - Not Applicable



Material Safety Data Sheet

CHEVRON Ultra-Duty Grease EP NLGI 2

CPS238011

Page 1 of 6

PRIESTLY OIL
ATTN: KAETHE
2429 N. BORTHWICH
PORTLAND, OR 97227

Print Date: January 21, 1993

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Changes have been made throughout this Material safety Data Sheet. Read the entire document.

1. PRODUCT IDENTIFICATION

CHEVRON Ultra-Duty Grease EP NLGI 2

PRODUCT NUMBER(S): CPS238011
PRODUCT INFORMATION: (800)582-3835

Revision Number: 2	Revision Date: 03/22/92	MSDS Number: 004501
NDA - No Data Available	NA - Not Applicable	

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID-EMERGENCY PH. (800)457-2022/(510)233-3737 (24 HR)

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation.

DERMAL TOXICITY:

If absorbed through the skin, this substance is considered practically non-toxic to internal organs. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 2**Revision Date: 03/22/92****MSDS Number: 004501****NDA - No Data Available****NA - Not Applicable**

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: NA

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

Revision Number: 2

Revision Date: 03/22/92

MSDS Number: 004501

NDA - No Data Available

NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Red grease.

BOILING POINT: NA

MELTING POINT: NDA

EVAPORATION: NA

SPECIFIC GRAVITY: NDA

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 22 cSt @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PH. (800)424-9300/(202)483-7616 (24 hr)

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills. Clean up spills immediately, observing precautions in Protective Equipment section.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory. This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Ultra-Duty Grease EP NLGI 2

CONTAINING

> 70.0 % DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC
CAS64742525 5 mg/m³ mist ACGIH TLV
10mg/m³ mist ACGIH STEL

Revision Number: 2

Revision Date: 03/22/92

MSDS Number: 004501

NDA - No Data Available

NA - Not Applicable

5mg/m3 mist OSHA TWA

AND

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547 5mg/3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

< 30.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1.	Immediate (Acute) Health Effects; NO
2.	Delayed (Chronic) Health Effects; NO
3.	Fire Hazard; NO
4.	Sudden Release of Pressure Hazard; NO
5.	Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

Revision Number: 2	Revision Date: 03/22/92	MSDS Number: 004501
NDA - No Data Available	NA - Not Applicable	

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

The Draize Eye Irritation Score (range, 0-110) in rabbits is 2.3/110.

SKIN IRRITATION:

The Draize Skin Primary Irritation Score (range, 0-8) for a 4-hour exposure (rabbits) is 0.6/8.0.*

DERMAL TOXICITY:

The dermal LD50 in rabbits is greater than 5.0 gm/kg.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 2

Revision Date: 03/22/92

MSDS Number: 004501

NDA - No Data Available

NA - Not Applicable

OIL RE-REFINING CO, INC.

4150 N. Suttle Road
Portland, OR 97217
(503) 286-8352

1-800-367-8894

EPA# WAD 980986012

P. O. Box 1407
701 Bozarth
Woodland, WA 98674
(206) 225-6571

FAX TRANSMISSION COVER SHEET

FAX NUMBER
(503) 286-5027

ATTENTION:

Howard Matheson

DATE:

2-25-93

COMPANY:

Ashgrove Cement

FAX#:

289-2212

FROM:

Bill

SUBJECT:

MSDS

COMMENTS:

*This is the current one. Bill also
sent you latest test results.*

We are transmitting 5 pages, including this cover sheet. Please contact us if any portion of this transmission is not received, or is illegible.



MATERIAL SAFETY DATA SHEET

Drain Oil

Manufacturer: CLEANCARE CORPORATION

Phone No: (206) 627-1976

Emergency Phone No: (206) 627-1976 (24-Hour Emergency Response)

Prepared by: CLEANCARE CORPORATION

Section 1 - Material Identification and Information

Components - Hazardous
None

Components - Non-hazardous
Petroleum Hydrocarbons - aliphatic 99+%
Lubricating Oil additives <1 %

Section 2 - Physical/Chemical Characteristics

Boiling Point	N.A.	Specific Gravity	0.8 - 0.9
Vapor Pressure	N.A.	Melting Point	N.A.
Vapor Density	N.A.	Evaporation Rate	N.A.
(air = 1)		(butyl acetate = 1)	
Solubility in	Not Soluble	Water Reactive	Not Reactive
Water			
Appearance and odor	Brown to black slightly viscous liquid - odor of oil		

Section 3 - Fire and Explosion Hazard Data

Flash Point	>230 F (closed tester)
Autoignition Temp.	N.A.
Flammability Limits in Air	LEL N.A. UEL N.A.
Extinguisher Media:	Foam, Carbon Dioxide or dry chemical extinguisher
Special Fire Fighting	
Procedures: Use of SCBA may be required.	Incomplete combustion may product CO
Unusual Fire/Explosion Hazards:	Unknown - hot vapors or aerosol may present a hazard.

Section 4 - Reactivity Hazard Data

Stability	Stable
Conditions to avoid:	Heat, sparks or open flame
Incompatibility:	Oxidizers
Hazardous decomposition	
Products:	Incomplete combustion may produce Carbon Monoxide
Hazardous Polymerization:	Will Not Occur

Section 5 - Health Hazard Data

Primary Routes of Entry:

Carcinogen Listed in:

Health Hazards - acute:

- chronic:

Sign/Symptoms of exposure

Medical Conditions Unknown

aggravated by exposure

First Aid Procedures

observation and

Eye contact:

Skin contact:

Inhalation:

Ingestion:

Skin absorption, ingestion

Not Listed

Dermatitis - other hazards unknown

Unknown

N.A.

seek medical assistance for further treatment, support if necessary.

Flush immediately with clear water - see a physician.

Clean area with soap and water - if irritation results see a physician.

Remove to fresh air - see a physician.

Immediately call for medical assistance.

Section 6 - Control and Protective Measures

Respiratory Protection:

Protective Gloves:

Eye Protection:

Ventilation to be used:

Other protective clothing:

Hygienic Work Practices:

None required

Recommended

Recommended

Local Exhaust

None required

Normal work practices

Section 7 - Precautions for Safe Handling and Use/Leak Procedures

Steps to be Taken (If Material is Spilled or Released):

Soak up spilled material with absorbent. Clean hard surfaced areas with detergent and water. Remove contaminated soil for disposal.

Waste Disposal Methods:

Incineration or landfill in accordance with state and local regulations.

Handling and Storage Precautions:

Work area should be ventilated. Keep away from heat or flame.

Special Hazards:

None

PRODUCT CODE: 78810 - 78812 PRODUCT NAME: KNOT WIRE CUP BRUSH 75787

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **KNOT WIRE CUP BRUSH 75787****SECTION I - Product Identification****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111Date Entered: 04/19/93
Last Revision: 04/19/93
MSDS Printed: 10/28/93**SYNONYMS:****CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - Hazardous Ingredients/Identity Information**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
Iron	IRON		5 mg/m3		1.0 - 99.0
Manganese Dioxide	MANGANESE		1.0 mg/m3		0.25 - 1.25
Trace Elements	TRACE ELEMEN		N/A		1.0 - 2.0

SECTION III - Physical/Chemical Characteristics

BOILING POINT: NE or NA **SPECIFIC GRAVITY (Water = 1):** 7.6 - 7.9
MELTING POINT: NE or NA **VAPOR PRESSURE (mm Hg):** . . . N/A
 VAPOR DENSITY (Air=1): . . . N/A
PHYSICAL STATES: [] Gas **EVAPORATION RATE:** N/A
 [] Liquid (Butyl Acetate=1)
 [X] Solid **SOLUBILITY IN WATER:** N/A
 PERCENT VOLATILE:

APPEARANCE AND ODOR:

Gray Metal - Odorless

SECTION IV - Fire and Explosion Hazard Data

FLASH PT: NE or NA **METHOD USED:** N/A **EXPLOSIVE LIMITS:** **LEL:** N/A **UEL:** N/A
EXTINGUISHING MEDIA:
No hazard - Not combustible in air.
SPECIAL FIRE FIGHTING PROCEDURES:
N/A
UNUSUAL FIRE AND EXPLOSION HAZARDS:
N/A

SECTION V - Reactivity Data

STABILITY: Unstable [] Stable [X]
CONDITIONS TO AVOID (Instability):
INCOMPATIBILITY (MATERIALS TO AVOID):
Avoid acids.
HAZARDOUS DECOMPOSITION OR BYPRODUCTS:
Fumes and/or gases from welding or burning operations.
HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]
CONDITIONS TO AVOID (Hazardous Polymerization):

SECTION VI - Health Hazard Data**ROUTE(S) OF ENTRY:** Inhalation? Skin? Eyes? Ingestion? Other: SEE HEALTH HAZARDS**HEALTH HAZARDS (Acute and Chronic):**

Steel products in the natural state do not present a inhalation, ingestion or contact hazard; however, operations such as burning, welding, sawing, brazing and grinding may release fumes and/or dusts which may present health hazards if TLV's are exceeded.

CARCINOGENITY: NTP? IARC Monographs? OSHA Regulated? Not considered to be a carcinogen.**RECOMMENDED EXPOSURE LIMITS:**

LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:

Exposure to the constituents of these products will only occur during activities such as welding or burning. However, because of the low toxicity of the components and/or low air levels anticipated during such activities, these products are not considered to be hazardous chemicals as defined by the Federal OSHA Hazard Communication Standards.

PRODUCT CODE: 78810 - 78812

PRODUCT NAME: KNOT WIRE CUP BRUSH 75787

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Chronic diseases or disorders of the respiratory system.

EMERGENCY AND FIRST AID PROCEDURES:

EYE CONTACT: Flush well with running water to remove particulate. SKIN CONTACT: Wash area well with soap and water.

INHALATION: Remove to fresh air. INGESTION: Not considered an ingestion hazard.

SECTION VII - Precautions for Safe Handling & Use**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

N/A

WASTE DISPOSAL METHOD:

Any excess product can be recycled for further use or disposed by methods which are in accordance with Local, State and Federal regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:**HAZARD LABEL INFORMATION:****OTHER PRECAUTIONS:****SECTION VIII - Control Measures****PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION****RESPIRATORY PROTECTION (SPECIFY TYPE):** NIOSH approved dust fume respirator when TLV is exceeded.**VENTILATION:****LOCAL EXHAUST:** To keep dust below TLV.**SPECIAL:****MECHANICAL (GENERAL):****OTHER:****PROTECTIVE GLOVES:****EYE PROTECTION:** SEE SECTION IX-ADDITIONAL COMMENTS**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:** SEE SECTION IX - ADDITIONAL COMMENTS.**WORK/HYGIENIC/MAINTENANCE PRACTICES:**

You must follow all operator and safety instructions, as well as common safety practices which will reduce the likelihood of severity of physical injury.

SECTION IX - Additional Comments**SECTION I:** Protective coatings are applied to the surface of the wire and components are less than 1% of the weight of the product. Typical coatings are petroleum based oils, phosphates, soap based lubricants, flash or wash metallic coatings of tin (stannous) sulphate and/or copper sulphate and indenes.**SECTION VIII:** Operators and others in the area (within 50 feet) must wear safety goggles or full face shields worn over safety glasses with side shields along with protective clothing.**WARNING:** In normal power brushing operations, the material being removed, such as burrs, scale, dirt, weld slag, or other residue will fly off the brush with considerable force along with the brush filaments which break off due to fatigue.

Material Safety Data Sheet

for

Calcium Hydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium hydroxide, calcium dihydroxide, $\text{Ca}(\text{OH})_2$, slaked lime, hydrated lime, lime, milk of lime, carboxide, caustic lime

Trade Name and Synonyms: Snowflake, Kemilime, Slik
CAS No. 001-305-620

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Data

Calcium hydroxide, $\text{Ca}(\text{OH})_2$: Hydrated lime, is prepared by adding sufficient water to calcium oxide, CaO , to cause complete hydration of the oxide. Impurities are removed from the resulting dry power by air separators.

Chemical Family: Inorganic Base

Molecular Weight: 74.10

Boiling Point: Decomposes to calcium oxide above 580°C

Melting Point: $(-\text{H}_2\text{O})$ at 580°C ; converts to calcium oxide

Vapor Pressure (mm Hg): N/A

Specific Gravity: 2.24

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.185 g/100 ml at 0°C
0.077 g/100 ml at 100°C

Appearance and Odor: Soft white powder; odorless

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Hydrated Lime, $\text{Ca}(\text{OH})_2$	5 mg/m ³	5 mg/m ³	5 mg/m ³

ACGIH American Conference of Governmental Industrial Hygienists
 MSHA Mine Safety and Health Administration
 OSHA Occupational Safety and Health Administration
 PEL Permissible Exposure Limit
 TLV Threshold Limit Value
 TWA Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: NA; UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Section V - Reactivity Data (Cont'd.)

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.5, with water.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough are common.
- c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.

Section VI - Health Hazard Data - Cont'd.

- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture (NFPA 40, HAZARDOUS CHEMICALS DATA, 1975).

Section VIII - Control Measures

Respiratory Protection: A NIOSH-MSHA approved respirator must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Section VIII - Control Measures (Cont'd.)

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225
Emergency Telephone Number: (913) 451-8900
Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime,
unslaked lime

Trade Name and Synonyms: Pebble Quicklime, Cal-Max

CAS No. 1305-78-8

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Data

Calcium oxide, "Quicklime", is prepared by heating sized calcium carbonate stone, usually limestone, in kilns heated to greater than 900°C. At this temperature calcium carbonate loses carbon dioxide to form calcium oxide.

Chemical Family: Inorganic Base
Molecular Weight: 56.10
Boiling Point: 5162°C
Melting Point: 4737°F.
Specific Gravity: 3.2-3.4
Vapor Density: (Air=1) 0 Evaporation Rate: N/A
Solubility in Water: 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C
Appearance and Odor: White granular or powder; faint earthy odor

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Quicklime, CaO	5 mg/m ³	2 mg/m ³	5 mg/m ³

Calcium oxide may contain quartz, free silica. Chronic exposure to the respirable dust of materials containing quartz; e.g., sand and gravel, has caused silicosis.

	ACGIH TLV (TLV-8 hr TWA) mg/m ³	OSHA PEL	MSHA TLV (Adopts 1973 ACGIH TLV)
Quartz, free silica	0.1	0.1*	TLV = $\frac{10}{\% \text{ SiO}_2 * + 2}$

*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists
 MSHA Mine Safety and Health Administration
 OSHA Occupational Safety and Health Administration
 PEL Permissible Exposure Limit
 TLV Threshold Limit Value
 TWA Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Flash Point: NA; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.5. See Section VII for appropriate precautions.

Section IV - Fire and Explosion Hazard Data - Cont'd.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray, fog or alcohol foam.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Unstable; will rapidly hydrate in contact with water with production of heat to form calcium hydroxide.

Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with interhalogens may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough are common.

Section VI - Health Hazard Data - Cont'd.

- c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. **Skin contact:** corrosive
 - a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

OSHA regulated: Yes, PEL of 5 mg/m³

Medical conditions generally aggravated by exposure: NA

Section VII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled:

Occupational Spill: Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead

Section VII - Precautions for Safe Handling and Use - Cont'd.

of spill for later disposal.

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.5, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Waste Disposal Methods

1. May be used to neutralize acid wastes.
2. May be used agriculturally.
3. Controlled discharge into sewers with sewage plant's approval.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use NIOSH-MSHA approved respirator for protection against dust.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Hydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900
Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium hydroxide, calcium dihydroxide, $\text{Ca}(\text{OH})_2$, slaked lime, hydrated lime, lime, milk of lime, carboxide, caustic lime

Trade Name and Synonyms: Snowflake, Kemilime, Slik
CAS No. 001-305-620

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Data

Calcium hydroxide, $\text{Ca}(\text{OH})_2$: Hydrated lime, is prepared by adding sufficient water to calcium oxide, CaO , to cause complete hydration of the oxide. Impurities are removed from the resulting dry power by air separators.

Chemical Family: Inorganic Base

Molecular Weight: 74.10

Boiling Point: Decomposes to calcium oxide above 580°C

Melting Point: $(-\text{H}_2\text{O})$ at 580°C ; converts to calcium oxide

Vapor Pressure (mm Hg): N/A

Specific Gravity: 2.24

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.185 g/100 ml at 0°C
0.077 g/100 ml at 100°C

Appearance and Odor: Soft white powder; odorless

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Hydrated Lime, $\text{Ca}(\text{OH})_2$	5 mg/m ³	5 mg/m ³	5 mg/m ³

ACGIH American Conference of Governmental Industrial Hygienists
MSHA Mine Safety and Health Administration
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value
TWA Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: NA; UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Section V - Reactivity Data (Cont'd.)

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.5, with water.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough are common.
- c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.

Section VI - Health Hazard Data - Cont'd.

- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture (NFPA 40, HAZARDOUS CHEMICALS DATA, 1975).

Section VIII - Control Measures

Respiratory Protection: A NIOSH-MSHA approved respirator must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Section VIII - Control Measures (Cont'd.)

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Hydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium hydroxide, calcium dihydroxide, $\text{Ca}(\text{OH})_2$, slaked lime, hydrated lime, lime, milk of lime, carboxide, caustic lime

Trade Name and Synonyms: Snowflake, Kemilime, Slik
CAS No. 001-305-620

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Data

Calcium hydroxide, $\text{Ca}(\text{OH})_2$: Hydrated lime, is prepared by adding sufficient water to calcium oxide, CaO , to cause complete hydration of the oxide. Impurities are removed from the resulting dry power by air separators.

Chemical Family: Inorganic Base

Molecular Weight: 74.10

Boiling Point: Decomposes to calcium oxide above 580°C

Melting Point: ($-\text{H}_2\text{O}$) at 580°C ; converts to calcium oxide

Vapor Pressure (mm Hg): N/A

Specific Gravity: 2.24

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.185 g/100 ml at 0°C

0.077 g/100 ml at 100°C

Appearance and Odor: Soft white powder; odorless

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Hydrated Lime, $\text{Ca}(\text{OH})_2$	5 mg/m ³	5 mg/m ³	5 mg/m ³

ACGIH American Conference of Governmental Industrial Hygienists
MSHA Mine Safety and Health Administration
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value
TWA Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: NA; UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Section V - Reactivity Data (Cont'd.)

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.5, with water.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough are common.
- c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.

Section VI - Health Hazard Data - Cont'd.

- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture (NFPA 40, HAZARDOUS CHEMICALS DATA, 1975).

Section VIII - Control Measures

Respiratory Protection: A NIOSH-MSHA approved respirator must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Section VIII - Control Measures (Cont'd.)

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime,
unslaked lime

Trade Name and Synonyms: Pebble Quicklime, Cal-Max

CAS No. 1305-78-8

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Data

Calcium oxide, "Quicklime", is prepared by heating sized calcium carbonate stone, usually limestone, in kilns heated to greater than 900°C. At this temperature calcium carbonate loses carbon dioxide to form calcium oxide.

Chemical Family: Inorganic Base

Molecular Weight: 56.10

Boiling Point: 5162°C

Melting Point: 4737°F.

Specific Gravity: 3.2-3.4

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C

Appearance and Odor: White granular or powder; faint earthy odor

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Quicklime, CaO	5 mg/m ³	2 mg/m ³	5 mg/m ³

Calcium oxide may contain quartz, free silica. Chronic exposure to the respirable dust of materials containing quartz; e.g., sand and gravel, has caused silicosis.

	ACGIH TLV (TLV-8 hr TWA) mg/m ³	OSHA PEL	MSHA TLV (Adopts 1973 ACGIH TLV)
Quartz, free silica	0.1	0.1*	TLV = $\frac{10}{\% \text{ SiO}_2 + 2}$

*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists
 MSHA Mine Safety and Health Administration
 OSHA Occupational Safety and Health Administration
 PEL Permissible Exposure Limit
 TLV Threshold Limit Value
 TWA Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Flash Point: NA; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.5. See Section VII for appropriate precautions.

Section IV - Fire and Explosion Hazard Data - Cont'd.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray, fog or alcohol foam.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Unstable; will rapidly hydrate in contact with water with production of heat to form calcium hydroxide.

Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with interhalogens may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough are common.

Section VI - Health Hazard Data - Cont'd.

- c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. **Skin contact:** corrosive
 - a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

OSHA regulated: Yes, PEL of 5 mg/m³

Medical conditions generally aggravated by exposure: NA

Section VII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled:

Occupational Spill: Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead

Section VII - Precautions for Safe Handling and Use - Cont'd.

of spill for later disposal.

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.5, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Waste Disposal Methods

1. May be used to neutralize acid wastes.
2. May be used agriculturally.
3. Controlled discharge into sewers with sewage plant's approval.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use NIOSH-MSHA approved respirator for protection against dust.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

MATERIAL SAFETY DATA SHEET

Revision Date: 93-06-04

Original Date: 81-01-23



NO. 149B

Page 1

PRODUCT NAME: Activated Aluminas

Aluminum Co. of America, Industrial Chemical Div., P.O. Box 300, Bauxite, AR 72001

Emergency Phone: 412-553-4001

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATIONChemical Formula: Aluminum Oxide $Al_2O_3 \cdot xH_2O$

Product Name: Activated Aluminas

Other Designation: F-1, F-20, F-200, HF-200, S-100, S-400, CG-20, OF-2000, Active bed supports, SRU, PSD-350, RF-200, RC-400.

USA Phones: Chemtrec: 800-424-9300; Health & Safety: 412-553-4649; Product Information: 800-643-8771

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	Exposure Limits	Typical % by Weight
Aluminum oxide	1333-84-2	ACGIH TLV 10 mg/m ³ OSHA PEL 15, 5 mg/m ³ respirable	90.0-97.0
*Silicon dioxide	—	—	0.01-0.2
*Expressed as oxide equivalent			

3. HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW**

No unusual fire or spill hazard. Dust may be irritating to eyes and upper respiratory tract. Off-white crystalline or gelatinous granules, pellets, or powder.

Potential Health Effects**EYES:** May cause irritation due to desiccant properties.**SKIN:** None.**INHALATION:** May cause irritation of upper respiratory tract due to desiccant properties.

This product contains silicates at <1% by weight. Silicates include metal silicates, amorphous and crystalline silica. No analytical method exists to detect and differentiate between amorphous and crystalline silica and other silicates at <1% by weight. Based on the chemistry of bauxite-derived products, crystalline silica is not expected to be present in this product.

Alumina is a low health risk by inhalation and should be treated as a nuisance dust as specified by the American Conference of Governmental Industrial Hygienists (ACGIH).

4. FIRST AID MEASURES**EYES:** Flush eyes with plenty of water for at least 15 minutes. If irritation persists, consult a physician.**SKIN:** Wash with soap and warm water. If irritation develops, consult a physician.**INHALATION:** Remove victim to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.

MATERIAL SAFETY DATA SHEET

Revision Date: 93-06-04 Original Date: 81-01-23

NO. 149B

Page 2

PRODUCT NAME: Activated Aluminas**5. FIRE FIGHTING MEASURES****FLAMMABLE PROPERTIES:** Non-flammable.

Flash Point: None.

Flammable Limits: None

AUTO-IGNITION TEMPERATURE: Not applicable.**HAZARDOUS COMBUSTION PRODUCTS:** None.**EXTINGUISHING MEDIA:** Use extinguishing agent applicable to surrounding fire.**FIREFIGHTING INSTRUCTIONS:** Firefighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.**6. ACCIDENTAL RELEASE MEASURES****SMALL/LARGE SPILL:** Clean up using dry procedures; avoid dusting.**7. HANDLING AND STORAGE****HANDLING:** Avoid contact with eyes. Do not inhale dust.**STORAGE:** Keep material dry.**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****ENGINEERING CONTROLS:** Use with adequate ventilation to meet exposure limits listed in Section 2.**RESPIRATORY PROTECTION:** NIOSH-approved dust respirator where exposure limit is or may be exceeded.**SKIN PROTECTION:** None.**EYE PROTECTION:** Safety glasses recommended.**9. PHYSICAL AND CHEMICAL PROPERTIES****APPEARANCE:** Off-white, crystalline or gelatinous granules, pellets/powder.**BOILING POINT:** Not applicable**FREEZE-MELT POINT:** 3700°F (2038°C)**VAPOR PRESSURE (mm):** Not applicable**VAPOR DENSITY (air=1):** Not applicable**SOLUBILITY IN WATER:** Insoluble; soluble in concentrated acids and alkalies.**SPECIFIC GRAVITY:** 3.2**DENSITY:** Loose Bulk: 39-52 lb/ft³ (0.62-0.83 g/cm³).**pH:** -10 (20% slurry solution)**ODOR:** None**ODOR THRESHOLD (ppm):** Not applicable**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not applicable

MATERIAL SAFETY DATA SHEET

Revision Date: 93-06-04 Original Date: 81-01-23

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Page 3

PRODUCT NAME: Activated Aluminas**10. STABILITY AND REACTIVITY****CHEMICAL STABILITY (CONDITIONS TO AVOID):** Avoid water.**INCOMPATIBILITY:** None.**HAZARDOUS DECOMPOSITION PRODUCTS:** None.**HAZARDOUS POLYMERIZATION:** None.

Generates heat with water.

Non-corrosive.

11. TOXICOLOGICAL INFORMATIONNo LD₅₀ or LC₅₀ found for oral, dermal or inhalation routes of administration.**12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL /CHEMICAL FATE INFORMATION:**

Not available.

13. DISPOSAL CONSIDERATION

Collect in containers, bags, or covered dumpster boxes. If reuse or recycling is not possible, material may be disposed of at a sanitary landfill.

TCLP data are available.

RCRA Hazardous Waste No.: Not federally regulated.

14. TRANSPORT INFORMATION

Not regulated by U.S.A. DOT.

Canadian TDG Hazard Class & PIN - Not regulated.

15. REGULATORY INFORMATION

For inventory reporting purposes, CAS No. 1344-28-1 was assigned for aluminum hydroxide and activated alumina products instead of the CAS number indicated in Section 2.

This material does not contain nor was it manufactured using ozone-depleting chemicals.

U.S. FEDERAL REGULATIONS:**TSCA STATUS:** On Toxic Substances Control Act inventory.**CERCLA REPORTABLE QUANTITY:** None.

MATERIAL SAFETY DATA SHEET

Revision Date: 93-06-04 Original Date: 81-01-23

NO. 149B
Page 4**PRODUCT NAME:** Activated Aluminas**SARA TITLE III:**

Section 302 Extremely Hazardous Substances:	None.
Section 311/312 Hazardous Categories:	Immediate (Acute).
Section 313 Toxic Chemicals:	None.

RCRA STATUS: Not regulated.**INTERNATIONAL REGULATIONS:****CANADIAN WHMIS:** Listed on Domestic Substances List.**EINECS:** All components of this product are on the European Inventory of Existing Commercial Chemical Substances.**16. OTHER INFORMATION**

MSDS Status: New format.
Product Use: Absorbent; dehydration agent; catalyst support.
Prepared by the Hazardous Materials Control Committee.

REFERENCES:

- American Industrial Hygiene Association (AIHA) Hygienic Guide Series, June 1978 Edition.
- U.S. Dept. of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances, 1985-86 Edition.
- Sax, N. Irving: Dangerous Properties of Industrial Materials, Van Nostrand Reinhold Co., Inc., 1984.
American Conference of Governmental Industrial Hygienists, Inc. (ACGIH), Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition, 1992.

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied can be made.

Material Safety Data Sheet

for

Calcium Carbonate

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Substance: Calcium Carbonate, Calcite, CaCO_3 , Ground Limestone (CAS No. 471-34-1), Ash Grove Grid Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: Ca-C-O_3

Revision Date: June, 1993

Section II - Hazardous Ingredients/Identity Information

Calcium Carbonate

CaCO_3	OSHA Pel	ACGIH TLV
Nuisance particulate:	Total dust, 15 mg/m^3	10 mg/m^3
	Respirable fraction 5 mg/m^3 *	

*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

Calcium carbonate may contain quartz as an impurity. The OSHA PEL for quartz, crystalline silica, is 0.1 mg/m^3 , respirable dust only.

Quartz an OSHA carcinogen: No By NTP: Yes By IARC: Yes

Section III - Physical/Chemical Characteristics

Boiling Point: NA*	Specific Gravity: 2.710
Vapor Pressure(mm Hg): 0	Melting Point: Decomposes 900°C
Vapor Density: (Air=1) NA	Evaporation Rate: NA
Solubility in Water: .0014% (25°C)	
Appearance and Odor: White powder or granules; no odor	

*NA = Not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA
Flammable or Explosive Limits: NA LEL: NA UEL: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA
Firefighting Media: NA
Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; eyes
Acute exposure: No known effects
Chronic exposure: No known
First aid: Eyes - treat as any inert foreign object

OSHA Regulated: Yes - SEE OSHA PEL in Section II

Medical Conditions Generally Aggravated by Exposure: Any preexisting lung disease, such as emphysema or tuberculosis.

Nuisance dust, unless the airborne product contains > 1% crystalline silica (quartz), is a simple mechanical irritant to eyes, skin and upper respiratory system. Exposure to respirable quartz without use of a respirator can result in silicosis. The usually form is chronic resulting from long term exposure to respirable quartz.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respirator: In dusty environments, the use of a MSHA/NIOSH approved respirator for particulates is recommended.

Firefighting: NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Carbonate

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Substance: Calcium Carbonate, Calcite, CaCO_3 , Ground Limestone (CAS No. 471-34-1), Ash Grove Grid Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: Ca-C-O_3

Revision Date: June, 1993

Section II - Hazardous Ingredients/Identity Information

Calcium Carbonate

CaCO_3

Nuisance particulate:

OSHA Pel

Total dust, 15 mg/m^3

Respirable fraction 5 mg/m^3 *

ACGIH TLV

10 mg/m^3

*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

Calcium carbonate may contain quartz as an impurity. The OSHA PEL for quartz, crystalline silica, is 0.1 mg/m^3 , respirable dust only.

Quartz an OSHA carcinogen: No By NTP: Yes By IARC: Yes

Section III - Physical/Chemical Characteristics

Boiling Point: NA*

Specific Gravity: 2.710

Vapor Pressure(mm Hg): 0

Melting Point: Decomposes 900°C

Vapor Density: (Air=1) NA

Evaporation Rate: NA

Solubility in Water: .0014% (25°C)

Appearance and Odor: White powder or granules; no odor

*NA = Not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA
Flammable or Explosive Limits: NA LEL: NA UEL: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA
Firefighting Media: NA
Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; eyes
Acute exposure: No known effects
Chronic exposure: No known
First aid: Eyes - treat as any inert foreign object

OSHA Regulated: Yes - SEE OSHA PEL in Section II

Medical Conditions Generally Aggravated by Exposure: Any preexisting lung disease, such as emphysema or tuberculosis.

Nuisance dust, unless the airborne product contains > 1% crystalline silica (quartz), is a simple mechanical irritant to eyes, skin and upper respiratory system. Exposure to respirable quartz without use of a respirator can result in silicosis. The usually form is chronic resulting from long term exposure to respirable quartz.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

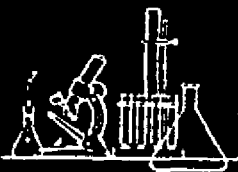
Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respirator: In dusty environments, the use of a MSHA/NIOSH approved respirator for particulates is recommended.

Firefighting: NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



POLYGEM

1105 CAROLINA DRIVE WEST CHICAGO, IL 60185 TEL: (708) 231-5600 FAX: (708) 231-5604

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation: 7/1/93

HEALTH - 1

FLAMMABILITY - 1

REACTIVITY - 1

OTHER - N/A

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC -600 II, Temperature Red

PRODUCT APPEARANCE: Red, Paste like, with Acidic Acid odor.

CHEMICAL NAME: ACETOXYSILANE

DOT HAZARD CLASSIFICATION: N/A

EMERGENCY TELEPHONE NUMBERS

1-800-535-5053 INFOTRAC

1-708-231-5600 POLYGEM, INC.

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT

ACETOXYSILANE

CAS

T/S

PEL/TLV-TWA

N/E

STEL-TWA

N/E

N/E Not Established

T/S Trade Secret

S Skin

Listed above are the hazardous component(s) as defined in 49 CFR 172 and 29 CFR 1910 which are present in this product and all components which appear on the hazardous substance list of any state.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represent approximate or typical values. They do not constitute product specifications

BOILING RANGE: > 300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

EVAPORATION RATE: LESS THAN 1

WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

LOWER FLAMMABILITY LIMIT: N/A

TEST METHOD: SETAFLASH CLOSED CUP

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS

REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE

INCOMPATIBILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acidic Acid vapors are formed

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION 6 - HEALTH HAZARD DATA**EFFECTS OF OVEREXPOSURE:**

INHALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye irritation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin irritation on prolonged or repeated exposure.

SKIN ABSORPTION: May cause skin irritation on prolonged or repeated exposure.

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce vomiting. Seek medical attention. May cause burns of mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection.

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 8 - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION:**

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

SECTION 9 - SPECIAL PRECAUTIONS**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:**

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION**REGULATORY INFORMATION:**

N/A

SARA HAZARD CLASSIFICATION:

SARA Title III regulations (40 CFR 370). N/A

SARA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

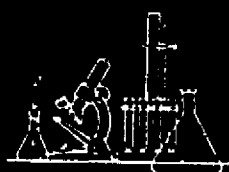
DOT PROPER SHIPPING NAME:

SILICONE

UN NUMBER:

N/A

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POLYGEM

1105 CAROLINA DRIVE WEST CHICAGO, IL 60185 TEL: (708) 231-5600 FAX: (708) 231-5604

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation: 7/1/93

HEALTH - 1

FLAMMABILITY - 1

REACTIVITY - 1

OTHER - N/A

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC -500 (COLORS)

EMERGENCY TELEPHONE NUMBERS

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

1-800-535-5053 - INFOTRAC

CHEMICAL NAME: ACETOXYSILANE

1-708-231-5600 POLYGEM, INC.

DOT HAZARD CLASSIFICATION: N/A

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT
ACETOXYSILANE

CAS #
T/S

PEL/TLV-TWA
N/E

STEL-TWA
N/E

N/E - Not Established

T/S - Trade Secret

S - Skin

Listed above are the hazardous components as defined in 49 CFR 172 and 29 CFR 1910 which are present in this product and all components which appear on the hazardous substance list of any state.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represent approximate or typical values. They do not constitute product specifications.

BOILING RANGE: > 300 F

VAPOR DENSITY (AIR=1): NOT VOLATILE

MELTING POINT: N/A

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

DENSITY: 1.05

EVAPORATION RATE: LESS THAN 1

PERCENT VOLATILE: LESS THAN 5%

WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

TEST METHOD: SETAFASH CLOSED CUP

LOWER FLAMMABILITY LIMIT: N/A

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS.
REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC.

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATIBILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acidic Acid vapors are formed.

SECTION 6 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

4) **IN:** May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye irritation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin irritation on prolonged or repeated exposure.

IN ABSORPTION: May cause skin irritation on prolonged or repeated exposure.

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce vomiting. Seek medical attention. May cause burns of mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

CARCINOGENICITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection.

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Respirator should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION

REGULATORY INFORMATION:

N/A

HAZARD CLASSIFICATION:

SARA Title III regulations (40 CFR 370): N/A

SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

OTHER SHIPPING NAME:

SILICONE

UNIFORMED NUMBER:

N/A

This information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from sources believed by Polygem, Inc. to be accurate, and Polygem, Inc. does not assure any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct their own tests. Before using any product, read it's label.

REPORT NUMBER: 703

VAN WATERS & ROGERS INC.

PAGE: 002

MSDS NO: DZ40500

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 07/01/93

VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055

PROD NO : 279390

LFL: Not applicable

UFL: Not applicable

EXTINGUISHING MEDIA: Non-flammable.

FIRE & EXPLOSION HAZARDS: Hydrochloric acid itself is non-flammable. There is, however, a latent fire or explosion hazard due to hydrogen gas generated when acid is in contact with metals.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Contact with metals may cause generation of flammable concentrations of hydrogen gas.

— INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid base and corrosive materials. Avoid contact with most metals. Avoid oxidizing material, can oxidize to chlorine.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small quantities may be flushed with copious quantities of water; in case of larger amounts, contain liquid. Use limestone, lime or soda ash to cautiously neutralize since considerable amounts of heat and steam may be generated on neutralization.

DISPOSAL METHOD: Contact The Dow Chemical Company for further instructions.

6. HEALTH HAZARD DATA:

EYE: May cause pain, lachrymation (tears), and severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

SKIN CONTACT: Short single exposure may cause severe skin burns.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined.

REPORT NUMBER: 703 VAN WATERS & ROGERS INC.
MSDS NO: DZ40500 MATERIAL SAFETY DATA SHEET
MAINFRAME UPLOAD DATE: 07/01/93

PAGE: 001
VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055
PROD NO : 279390

ASH GROVE CEMENT
13939 N. RIVERGATE BLVD
P O BOX 03007

PORTLAND ,OR 97203

VAN WATERS & ROGERS INC. , A ROYAL PAKHOED COMPANY (425)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

----- EMERGENCY ASSISTANCE -----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

PRODUCT NAME:
HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

MSDS #: DZ40500

1. INGREDIENTS: (% w/w, unless otherwise noted)

Hydrogen chloride	CAS# 007647-01-0	31.5%
Water	CAS# 007732-18-5	Balance

2. PHYSICAL DATA:

BOILING POINT: 178F (81.5C)
VAP PRESS: 25 mmHg, 3.3 kpa @ 20C
VAP DENSITY: (Air=1) 11.0
SOL. IN WATER: Infinite.
SP. GRAVITY: 1.16
APPEARANCE: White to yellow clear liquid.
ODOUR: A pungent odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None
METHOD USED: TCC

FLAMMABLE LIMITS

REPORT NUMBER: 703

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

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MSDS NO: DZ40500

MAINFRAME UPLOAD DATE: 07/01/93

VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055

PROD NO : 279390

INGESTION: Ingestion may cause gastrointestinal irritation or ulceration and severe burns of the mouth and throat.

INHALATION: Excessive vapor concentrations are readily attainable and may cause serious adverse effects, even death. Excessive exposure may cause severe irritation and injury to upper respiratory tract and lungs.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposure may cause erosion of teeth and bleeding and ulceration of nose, mouth and gums. Did not cause cancer in long-term animal studies.

7. FIRST AID:

EYES: Immediate and continuous irrigation with flowing water at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopy control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV and OSHA PEL are 5 ppm ceiling.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator. For emergency and other conditions where the

REPORT NUMBER: 703

VAN WATERS & ROGERS INC.

PAGE: 004

MSDS NO: DZ40500

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 07/01/93

VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055

PROD NO : 279390

exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Safety shower should be located in immediate work area. Wash contaminated clothing before reuse. Dispose of contaminated shoes.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face respirator. Wear a face-shield which allows use of chemical goggles, or a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Eye wash fountain and safety shower should be located in immediate work area.

9. ADDITIONAL INFORMATION:

- SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent all contact with eyes and skin. Avoid breathing irritating vapors.

MSDS STATUS: Revised section 9 and regsheet.

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented).

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

=====

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
HYDROCHLORIC ACID	007647-01-0	32 %

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055
PROD NO : 279390

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

- An immediate health hazard
- A delayed health hazard

CANADIAN REGULATIONS
=====

The Workplace Hazardous Materials Information System (W.H.M.I.S.) Classification for this product is:

D1A
E

The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

Hydrochloric Acid/Class 8, (9.2)/UN1789/II/ERP2-0011

MATERIAL SAFETY DATA SHEET

VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055

PROD NO : 279390

FOR ADDITIONAL INFORMATION

CONTACT: MSDS COORDINATOR

VAN WATERS & ROGERS INC.

DURING BUSINESS HOURS, PACIFIC TIME

(425) 889-3400

10/15/97 16:39

PRODUCT: 279390

CUST NO: 107510

ORDER NO: 419055

NOTICE

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DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR

A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED

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CONSEQUENTIAL DAMAGES. **

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* * * E N D O F M S D S * * *

REPORT NUMBER: 703
MSDS NO: DZ40500
EFFECTIVE DATE: 07/01/93

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

PAGE: 001
VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043
PROD NO : 279390

ASH GROVE CEMENT
13939 N. RIVERGATE BLVD

PORTLAND ,OR 97203

VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

----- EMERGENCY ASSISTANCE -----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

----- FOR PRODUCT AND SALES INFORMATION -----

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE AT
VW&R PORTLAND 503-222-1721 PORTLAND , OR

PRODUCT NAME:
HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

MSDS #: DZ40500

1. INGREDIENTS: (% w/w, unless otherwise noted)

Hydrogen chloride	CAS# 007647-01-0	31.5%
Water	CAS# 007732-18-5	Balance

2. PHYSICAL DATA:

BOILING POINT: 178F (81.5C)
VAP PRESS: 25 mmHg, 3.3 kpa @ 20C
VAP DENSITY: (Air=1) 11.0
SOL. IN WATER: Infinite.
SP. GRAVITY: 1.16
APPEARANCE: White to yellow clear liquid.
ODOUR: A pungent odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None
METHOD USED: TCC

FLAMMABLE LIMITS

REPORT NUMBER: 703
MSDS NO: DZ40500
EFFECTIVE DATE: 07/01/93

VAN WATERS & ROBERS INC.
MATERIAL SAFETY DATA SHEET

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VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043
PROD NO : 279390

LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: Non-flammable.

FIRE & EXPLOSION HAZARDS: Hydrochloric acid itself is non-flammable. There is, however, a latent fire or explosion hazard due to hydrogen gas generated when acid is in contact with metals.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Contact with metals may cause generation of flammable concentrations of hydrogen gas.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid base and corrosive materials. Avoid contact with most metals. Avoid oxidizing material, can oxidize to chlorine.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small quantities may be flushed with copious quantities of water; in case of larger amounts, contain liquid. Use limestone, lime or soda ash to cautiously neutralize since considerable amounts of heat and steam may be generated on neutralization.

DISPOSAL METHOD: Contact The Dow Chemical Company for further instructions.

6. HEALTH HAZARD DATA:

EYE: May cause pain, lachrymation (tears), and severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

SKIN CONTACT: Short single exposure may cause severe skin burns.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined.

REPORT NUMBER: 702
MSDS NO: DZ40500
EFFECTIVE DATE: 07/01/93

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

PAGE: 003
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PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043
PROD NO : 279390

INGESTION: Ingestion may cause gastrointestinal irritation or ulceration and severe burns of the mouth and throat.

INHALATION: Excessive vapor concentrations are readily attainable and may cause serious adverse effects, even death. Excessive exposure may cause severe irritation and injury to upper respiratory tract and lungs.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposure may cause erosion of teeth and bleeding and ulceration of nose, mouth and gums. Did not cause cancer in long-term animal studies.

7. FIRST AID:

EYES: Immediate and continuous irrigation with flowing water at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopy control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV and OSHA PEL are 5 ppm ceiling.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator. For emergency and other conditions where the

REPORT NUMBER: 702
MSDS NO: D240500
EFFECTIVE DATE: 07/01/93

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

PAGE: 004
VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043
PROD NO : 279390

exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Safety shower should be located in immediate work area. Wash contaminated clothing before reuse. Dispose of contaminated shoes.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face respirator. Wear a face-shield which allows use of chemical goggles, or a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Eye wash fountain and safety shower should be located in immediate work area.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent all contact with eyes and skin. Avoid breathing irritating vapors.

MSDS STATUS: Revised section 9 and regsheet.

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented).

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

=====

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Pa. 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
HYDROCHLORIC ACID	007647-01-0	32 %

REPORT NUMBER: 703
MSDS NO: DZ40500
EFFECTIVE DATE: 07/01/93

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

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VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043
PROD NO : 279390

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard

CANADIAN REGULATIONS

=====

The Workplace Hazardous Materials Information System (W.H.M.I.S.) classification for this product is:

D1A
E

The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

Hydrochloric Acid/Class B, (9.2)/UN1789/II/ERP2-0011

REPORT NUMBER: 703
MSDS NO: DZ40500
EFFECTIVE DATE: 07/01/93

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

PAGE: 006
VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043
PROD NO : 279390

----- FOR ADDITIONAL INFORMATION -----

CONTACT: MSDS COORDINATOR VW&R PORTLAND
DURING BUSINESS HOURS, PACIFIC TIME (206)889-3400

03/06/95 14:15 PRODUCT: 279390 CUST NO: 107510 ORDER NO: 317043

----- NOTICE -----

*** VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR

IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE,

WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN, AND SHALL UNDER

NO CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.***

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE
MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS
BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR
SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&RS CONTROL AND THEREFORE USERS
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DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY
ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM
THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN.
THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
PROCESS.

* * * E N D O F M S D S * * *



POLYGEM

1105 CAROLINA DRIVE WEST CHICAGO, IL 60185 TEL: (708) 231-5600 FAX: (708) 231-5604

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation: 7/1/93

HEALTH - 1

FLAMMABILITY - 1

REACTIVITY - 1

OTHER - N/A

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC -500 (COLORS)

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

CHEMICAL NAME: ACETOXYSILANE

DOT HAZARD CLASSIFICATION: N/A

EMERGENCY TELEPHONE NUMBERS

1-800-535-5053 - INFOTRAC

1-708-231-5600 POLYGEM, INC.

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT

CAS

PEL/TLV-TWA

STEL-TWA

ACETOXYSILANE

T/S

N/E

N/E

N/E - Not Established

T/S - Trade Secret

S - Skin

(Listed above are the hazardous ingredients as defined in 29 CFR 1910.120 and 26 CFR 1910.1206 which are present in this product and all components which appear on the hazardous substance list of any state.)

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represent approximate or typical values. They do not constitute product specifications.

BOILING RANGE: > 300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

EVAPORATION RATE: LESS THAN 1

WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

LOWER FLAMMABILITY LIMIT: N/A

TEST METHOD: SETAFLASH CLOSED CUP

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS.

REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC.

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATIBILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acidic Acid vapors are formed.

SECTION 6 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

INHALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye irritation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin irritation on prolonged or repeated exposure.

SKIN ABSORPTION: May cause skin irritation on prolonged or repeated exposure.

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce vomiting. Seek medical attention. May cause burns of mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

MUTAGENICITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection.

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION

REGULATORY INFORMATION:

N/A

RA HAZARD CLASSIFICATION:

SARA Title III regulations (40 CFR 370): N/A

RA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

TRUE PROPER SHIPPING NAME:

SILICONE

NUMBER

N/A

Information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from sources believed by Polygem, Inc. to be accurate, and Polygem, Inc. does not assume any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct their own tests. Before using any product, read it's label.



POLYGEM

1105 CAROLINA DRIVE WEST CHICAGO, IL 60185 TEL: (708) 231-5600 FAX: (708) 231-5604

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation: 7/1/93

HEALTH - 1

FLAMMABILITY - 1

REACTIVITY - 1

OTHER - N/A

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC -500 (COLORS)

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

CHEMICAL NAME: ACETOXYSILANE

DOT HAZARD CLASSIFICATION: N/A

EMERGENCY TELEPHONE NUMBERS

1-800-535-5053 - INFOTRAC

1-708-231-5600 POLYGEM, INC.

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT
ACETOXYSILANE

CAS #
T/S

PEL/TLV-TWA
N/E

STEL-TWA
N/E

N/E - Not Established

T/S - Trade Secret

S - Skin

Noted above are the hazardous component(s) as defined in 48 CFR 172 and 29 CFR 1910 which are present in this product and all components which appear on the hazardous substance list of any state.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represent approximate or typical values. They do not constitute product specifications.

BOILING RANGE: > 300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

EVAPORATION RATE: LESS THAN 1

WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

LOWER FLAMMABILITY LIMIT: N/A

TEST METHOD: SETAFASH CLOSED CUP

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS.
REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC.

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATIBILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acidic Acid vapors are formed.

SECTION 6 - HEALTH HAZARD DATA**EFFECTS OF OVEREXPOSURE:**

INHALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye irritation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin irritation on prolonged or repeated exposure.

SKIN ABSORPTION: May cause skin irritation on prolonged or repeated exposure.

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce vomiting. Seek medical attention. May cause burns of mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection.

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 8 - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION:**

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

SECTION 9 - SPECIAL PRECAUTIONS**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:**

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION**REGULATORY INFORMATION:**

N/A

SARA HAZARD CLASSIFICATION:

SARA Title III regulations (40 CFR 370): N/A

SARA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

DOT PROPER SHIPPING NAME:

SILICONE

UN NUMBER:

N/A

This information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from sources believed by Polygem, Inc. to be accurate, and Polygem, Inc. does not assume any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct their own tests. Before using any product, read its label.

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203
503-286-1677 • FAX: 289-2272

VENDOR: 00712920

ATTN ORDER DESK
POLYDEM INCORPORATED
P. O. BOX 609
WEST CHICAGO, IL 60186-0609

PURCHASE ORDER NO.

89510242

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date Issued	7/28/95
Date Required	8/11/95
Terms	NET 30
Via	U.P.S.
Freight Terms	PRE-PAY & ADD

This order is ☐ a confirmation ☒ not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	✓ 48	EACH	SILICONE ADHESIVE SEALANT(CLEAR), POLYBAC (CARTRIDGE = 10.3 fl. oz.) Supplier #: POLYBAC # 500 CLEAR * M.S.D.S. REQUIRED * ** ORIGINAL ORDER ** (Per Inv # 21169 8/14/95)	05-10-302 OEM: 500		00-00-0420-0008	3.72

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

Page 1

MATERIAL SAFETY DATA SHEET

MSDS NO CODE: 0023

DENNISON DIVISION, AVERY-DENNISON INC
1 Clark Hill
Framingham, MA 01701

Revision Date: 07/30/93
Last Issue Date: 02/21/92
Telephone Number: 508/879-0511, 24711
EMERGENCY MEDICAL TELEPHONE NUMBER: 508/879-0511, 24636

SECTION I PRODUCT IDENTIFICATION

Avery-Dennison Identity: STAMP PAD INKS

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Material Name	CAS #	OSHA PEL	ACGIH TLV
ETHYLENE GLYCOL	107-21-1	PPM 50 PPM	PPM 50 PPM

All of the chemicals listed above are in compliance with OSHA, CFR, 1910.1200.
A finished stamp pad contains a substantially lower percentage by weight of each chemical and has the ink held within an absorbent material.

SECTION III PHYSICAL DATA

Boiling Point: 368 F	Appearance: LIQUID-COLORED
Specific Gravity: 1.06 @ 20C	Odor: MILD ODOR
Vapor Pressure (mmHg): 0.22 @ 20C	Water Solubility: COMPLETE
Vapor Density (Air=1): N/A	Evaporation Rate (Butyl Acetate=1): < 0.01
Melting Point: N/A	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point: 225 F	Method Used: PMOC
Flammable Limits: N/A	Extinguishing Media: FOAM, CARBON DIOXIDE, DRY CHEMICAL
Fire Fighting Procedure: WEAR SELF-CONTAINED BREATHING APPARATUS, USE WATER SPRAY TO COOL NEARBY CONTAINERS	
Unusual Hazards: NONE	

SECTION V REACTIVITY DATA

Stability: YES
Conditions to avoid: N/A
Incompatibility: STRONG OXIDIZING AGENTS
Hazardous Decomposition: MAY FORM TOXIC MATERIALS, CARBON DIOXIDE OR CARBON MONOXIDE
Hazardous Polymerization: WILL NOT OCCUR

SECTION VI HEALTH HAZARD DATA

Symptoms of overexposure for each potential route of exposure:

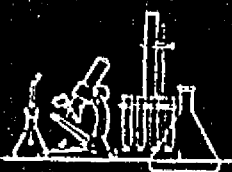
Inhaled: NO SYMPTOMS EXPECTED

Eye Contact: MAY CAUSE EYE IRRITATION

N/A - Not Applicable

N/E - Not Established

Form MSDS8L



POLYGEM

1105 CAROLINA DRIVE WEST CHICAGO, IL 60185 TEL: (708) 231-5600 FAX: (708) 231-5604

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation: 7/1/93

HEALTH - 1

FLAMMABILITY - 1

REACTIVITY - 1

OTHER - N/A

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC -500 (COLORS)

EMERGENCY TELEPHONE NUMBERS

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

1-800-535-5053 INFOTRAC

CHEMICAL NAME: ACETOXYSILANE

1-708-231-5600 POLYGEM, INC.

DOT HAZARD CLASSIFICATION: N/A

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT

CAS

PEL/TLV-TWA

STEL-TWA

ACETOXYSILANE

T/S

N/E

N/E

N/E - Not Established

T/S - Trade Secret

S - Skin

Listed above are the hazardous component(s) as defined in 48 CFR 172 and 29 CFR 1910 which are present in this product and all components which appear on the hazardous substance list of any state.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represent approximate or typical values. They do not constitute product specifications.

BOILING RANGE: > 300 F

VAPOR DENSITY (AIR=1): NOT VOLATILE

MELTING POINT: N/A

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

DENSITY: 1.05

EVAPORATION RATE: LESS THAN 1

PERCENT VOLATILE: LESS THAN 5%

WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

TEST METHOD: SETAFLASH CLOSED CUP

LOWER FLAMMABILITY LIMIT: N/A

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS.
REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC.

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATIBILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acedic Acid vapors are formed.

SECTION 6 - HEALTH HAZARD DATA**EFFECTS OF OVEREXPOSURE:**

INHALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye irritation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin irritation on prolonged or repeated exposure.

SKIN ABSORPTION: May cause skin irritation on prolonged or repeated exposure.

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce vomiting. Seek medical attention. May cause burns of mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection.

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 8 - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION:**

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

SECTION 9 - SPECIAL PRECAUTIONS**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:**

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION**REGULATORY INFORMATION:**

N/A

SARA HAZARD CLASSIFICATION:

SARA Title III regulations (40 CFR 370): N/A

SARA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

DOT PROPER SHIPPING NAME:

SILICONE

UN NUMBER:

N/A

This information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from sources believed by Polygem, Inc. to be accurate, and Polygem, Inc. does not assure any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct their own tests. Before using any product, read it's label.



HARBISON-WALKER REFRACTORIES

Division of INDRESCO Inc.

One Gateway Center, Pittsburgh, PA 15222

01/26/95

HOWARD MATHESON
ASH GROVE CEMENT COMPANY
13939 NORTH RIVERGATE BOULEVARD
PORTLAND, OR 97203

ATTENTION: SAFETY/ENVIRONMENTAL/INDUSTRIAL DEPARTMENT

Attached you will find Material Safety Data Sheets (MSDSs) for products recently shipped or to be shipped to your company. MSDSS are attached for the following products:

433011 HA ANCHORS

Please check to see if these MSDSS are revisions to existing sheets. If so, please note the changes before disarding the old Material Safety Data Sheets. Keep Material Safety Data Sheets in a safe place in case of accident.

If there are any questions, please feel free to contact me at 412-562-6513 or Steve Thrower at 412-562-6241.

Diane M. Menzies

**** MATERIAL SAFETY DATA SHEET ****

HARBISON-WALKER REFRACTORIES
DIVISION OF INDRESCO INC.
ONE GATEWAY CENTER
PITTSBURGH, PA 15222

CHEMTREC 24 Hour Emergency
Assistance Phone No.: 1-800-424-9300

Latest Revision Date...08/09/93
Print Date.....01/24/95
Prepared By: S. W. Thrower (412-562-6437)

HA ANCHORS

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT TRADENAME..... HA ANCHORS
TYPE OF REFRACTORY..... High Alumina Brick
H-W BRAND CODE..... 433011

HMIS RATING..... Health: 2 0 = Minimal
Flammability: 0 1 = Slight
Reactivity: 0 2 = Moderate
3 = Serious
4 = Severe

SECTION 2 HAZARDOUS INGREDIENTS / HAZARD DATA

CHEMICAL NAME (CHEMICAL FORMULA)	CAS NUMBER	% WEIGHT	OSHA TWA	ACGIH TLV	SEC.313
Cristobalite (SiO2)	14464-46-1	5-7	0.05 mg/cubic meter	0.05 mg/cubic meter	No
Alumina (Non-Fibrous) (Al2O3)	1344-28-1	63-65	10 mg/cubic meter	10 mg/cubic meter	No

SECTION 3 PHYSICAL DATA

pH..... Not determined
SPECIFIC GRAVITY OR BULK DENSITY 2.45
SOLUBILITY IN WATER..... Insoluble
APPEARANCE..... Buff color
ODOR..... No odor
FORM..... Brick

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Unless otherwise noted, no fire hazard.
Product is a refractory and will not burn.

SECTION 5 EFFECTS OF OVEREXPOSURE * ROUTE OF ENTRY

INGREDIENT	EFFECTS OF OVEREXPOSURE	SKIN	EYES	INHALATION
Crystalline Silica	Delayed lung fibrosis-silicosis	No	No	Yes
Crystalline Silica	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Alumina	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes

SECTION 6 EMERGENCY AND FIRST AID PROCEDURES

Irritants: Wash from skin or flush from eyes using large amounts of water.

SECTION 7 REACTIVITY DATA

PRODUCT STABILITY..... Stable
CHEMICAL INCOMPATIBILITY..... None
HAZARDOUS DECOMPOSITION PRODUCTS N/A
HAZARDOUS POLYMERIZATION..... Will not occur

HA ANCHORS

SECTION 7

REACTIVITY DATA

CONT'D

MATERIAL TO AVOID..... None

SECTION 8

SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

SECTION 9

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION.....	Where air contaminants can exceed acceptable criteria, use approved respiratory protection equipment appropriate to form and concentration of air contaminants.
VENTILATION.....	Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits.
PROTECTIVE GLOVES.....	Abrasion resistant
EYE PROTECTION.....	Approved safety glasses, goggles, or faceshields should be used.
FOOT PROTECTION.....	Metatarsal safety shoes
OTHER PRECAUTIONS.....	None

SECTION 10

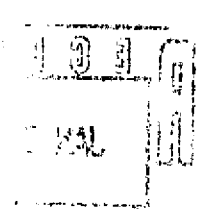
SPECIAL PRECAUTIONS

This product contains crystalline silica for which there is limited evidence of a possible association with the incidence of cancer in humans.

SECTION 11

SUPPLIER INFORMATION

This MSDS is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.



*** MATERIAL SAFETY DATA SHEET ***
=====

CHEMTREC 24 Hour Emergency
Assistance Phone No.: 1-800-424-9300

HARBISON-WALKER REFRACTORIES
DIVISION OF INDRESCO INC.
ONE GATEWAY CENTER
PITTSBURGH, PA 15222

Latest Revision Date...08/09/93
Print Date.....01/26/95
Prepared By: S. W. Thrower (412-562-6437)

HA ANCHORS

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SECTION 1 PRODUCT IDENTIFICATION

PRODUCT TRADENAME..... HA ANCHORS
TYPE OF REFRACTORY..... High Alumina Brick
H-W BRAND CODE..... 433011

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SECTION 3 PHYSICAL DATA

pH..... Not determined
SPECIFIC GRAVITY OR BULK DENSITY 2.45
SOLUBILITY IN WATER..... Insoluble
APPEARANCE..... Buff color
ODOR..... No odor
FORM..... Brick

=====

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Unless otherwise noted, no fire hazard.
Product is a refractory and will not burn.

=====

SECTION 5 EFFECTS OF OVEREXPOSURE * ROUTE OF ENTRY

INGREDIENT	EFFECTS OF OVEREXPOSURE	SKIN	EYES	INHALATION
Crystalline Silica	Delayed lung fibrosis-silicosis	No	No	Yes
Crystalline Silica	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Alumina	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes

=====

SECTION 6 EMERGENCY AND FIRST AID PROCEDURES

Irritants: Wash from skin or flush from eyes using large amounts of water.

=====

SECTION 7 REACTIVITY DATA

PRODUCT STABILITY..... Stable
CHEMICAL INCOMPATIBILITY..... None
HAZARDOUS DECOMPOSITION PRODUCTS N/A
HAZARDOUS POLYMERIZATION..... Will not occur

Page 1

SECTION 7REACTIVITY DATA

CONT'D

MATERIAL TO AVOID..... None

SECTION 8SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

SECTION 9SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION..... Where air contaminants can exceed acceptable criteria, use approved respiratory protection equipment appropriate to form and concentration of air contaminants.

VENTILATION..... Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits.

PROTECTIVE GLOVES..... Abrasion resistant

EYE PROTECTION..... Approved safety glasses, goggles, or faceshields should be used.

FOOT PROTECTION..... Metatarsal safety shoes

OTHER PRECAUTIONS..... None

SECTION 10SPECIAL PRECAUTIONS

This product contains crystalline silica for which there is limited evidence of a possible association with the incidence of cancer in humans.

SECTION 11SUPPLIER INFORMATION

This MSDS is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

MSDS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: LEMONILLA (Aerosol)	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
Section I	
Manufactured For: DYNACCO, INC. Address (Number, Street, City, State, and ZIP Code) 17461 147TH ST S.E. MONROE, WA. 98272	Emergency Telephone Number CALL CHEM-TEL (800) 255-3924 Telephone Number for Information (360) 794-8974 Date Prepared 8/11/93

SECTION II - HAZARDOUS INGREDIENTS

* INGREDIENT	* PERCENT	* OSHA PEL	* TLV PPM	* TLV MG/M3	* LEL	* CAS NUMBER
* ISOBUTANE (A)	70	1000	1000	1800.00	1.8	00075-28-
					30 +/- 5 PSIG	
*AEROSOL - CONTENTS UNDER PRESSURE						
*Carcinogenicity: THIS PRODUCT IS NOT CONSIDERED TO BE A CARCINOGEN						
* BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON						
* CANCER, THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OR NATIONAL						
* INSTITUTE FOR OCCUPATIONAL SAFETY & HEALTH.						
* SARA: Aerosol products are subject to SARA TITLE III Section 312 reporting for						
* Superfund Amendments and Reauthorization Act of 1986 and CFR 40 part 372.						
* Pursuant to Proposition 65, CERTAIN RAW MATERIALS USED IN MAKING THIS						
* PRODUCT MAY CONTAIN SMALL AMOUNTS OF MATERIALS AS IMPURITIES WHICH ARE						
* REGULATED BY PROPOSITION 65. SEE SECTION IX.						

SECTION III - PHYSICAL DATA

Boiling Range: PROPELLANT BELOW 0.0 F Vapor Density: HEAVIER THAN AIR

EVAPORATION RATE FASTER THAN ETHER	Percent Volatile	Weight Per
*PROPELLANTS	By Weight: 70	Gallon: NOT APPLICABLE
Specific Gravity: NOT APPLICABLE	Appearance & Odor: DISINFECTANT/DEODORIZER	
PH: NOT APPLICABLE	Vapor Pressure: NOT APPLICABLE	
Solubility in Water: NOT APPLICABLE	Melting Point: NOT APPLICABLE	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DOT Category: CONSUMER COMMODITY Flash Point: PROPELLANT BELOW 20 F LEL: SEE
 ORM-D (T.O.C.) SECTION II

Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL OR FOAM.

Unusual Fire and
 Explosion Hazards: DO NOT SPRAY NEAR OPEN FLAME. KEEP AT ROOM TEMPERATURE AS
 EXPOSURE TO DIRECT SUNLIGHT OR OTHER HEAT MAY CAUSE BURSTING.

Special Fire Fighting
 Procedures: WATER MAY BE INEFFECTIVE - WATER MAY BE USED TO KEEP FIRE
 EXPOSED CONTAINERS COOL.

SECTION V - HEALTH HAZARD DATA

Threshold Limit Value: (SEE SECTION II HAZARDOUS INGREDIENTS)

Effects of Overexposure: IN A CONFINED AREA VAPORS IN HIGH CONCENTRATION ARE ANESTHETIC. IRRITANT TO SKIN AND UPPER RESPIRATORY SYSTEM. OVER-EXPOSURE MAY RESULT IN LIGHT-HEADEDNESS, STAGGERING GAIT, GIDDINESS AND POSSIBLE NAUSEA. HARMFUL OR FATAL IF SWALLOWED

Chronic: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE, ALSO KIDNEY AND LIVER DAMAGE.

Medical Conditions Prone to Aggravation by Exposure: NONE ESTABLISHED.

Routes of Entry: Inhalation: YES Skin: YES Ingestion: NO

Emergency and First Aid Procedures:

Breathing: REMOVE PATIENT TO FRESH AIR.

Eyes: FLUSH WITH WATER FOR AT LEAST 15 MINUTES.

Skin: WASH WITH SOAP AND WATER.

Swallowing: CALL PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING.

SECTION VI - REACTIVITY DATA

Stability: STABLE Conditions to Avoid: DO NOT STORE ABOVE 120 F

Incompatibility (NONE)

Hazardous Decomposition Products By open flame: CARBON MONOXIDE, CARBON DIOXIDE

Hazardous Polymerization: WILL NOT OCCUR

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled:

REMOVE ALL SOURCES OF IGNITION, VENTILATE AVOID BREATHING VAPORS
(SEE SECTION X) AND REMOVE WITH INERT ABSORBENT

Waste disposal method:

DO NOT INCINERATE - DISPOSE IN ACCORDANCE WITH FEDERAL, STATE AND
LOCAL REGULATIONS REGARDING POLLUTION.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection: AVOID BREATHING OF VAPOR OR SPRAY MIST (SEE SECTION II)

IF PERSONAL EXPOSURE CANNOT BE CONTROLLED BELOW
APPLICABLE LIMITS BY VENTILATION, WEAR A PROPERLY
FITTED RESPIRATOR APPROVED BY NIOSH/MSHA FOR
PROTECTION AGAINST MATERIALS IN SECTION II.

Ventilation: PROVIDE LOCAL EXHAUST VENTILATION IN VOLUME AND
PATTERN TO KEEP TLV OF ALL HAZARDOUS INGREDIENTS
IN SECTION II BELOW ACCEPTABLE LIMIT, AND LEL
IN SECTION II BELOW STATED LIMIT.

Protective Gloves: FOR PROLONGED OR REPEATED CONTACT, WEAR GLOVES WHICH ARE RECOMMENDED BY GLOVE SUPPLIER FOR PROTECTION AGAINST MATERIALS IN SECTION II.

Eye Protection: FOR PROLONGED USE IN CLOSE QUARTERS RECOMMEND SAFETY GLASSES WITH UNPERFORATED SIDESHIELDS.

Other Protective Equipment:

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storing:

DO NOT STORE ABOVE 120 F. KEEP AT ROOM TEMPERATURE AS EXPOSURE TO DIRECT SUNLIGHT OR HEAT MAY CAUSE BURSTING.

Other Precautions:

KEEP AWAY FROM CHILDREN.

DO NOT PUNCTURE OR INCINERATE.

DO NOT SPRAY NEAR FIRE OR OPEN FLAME.

Pursuant to Proposition 65:

PROPOSITION 65 APPLIES TO A LIST OF CHEMICALS NAMED BY THE GOVERNOR OF CALIFORNIA AS CARCINOGENS OR REPRODUCTIVE TOXINS. WARNING REQUIREMENTS FOR SPECIFIC CHEMICALS TAKE EFFECT ONE YEAR AFTER THEY ARE ADDED TO THE GOVERNOR'S LIST. OTHER CHEMICALS ALREADY ADDED TO THE GOVERNOR'S LIST WILL BE REGULATED LATER UNDER PROPOSITION 65.

SECTION X HAZARDOUS MATERIAL IDENTIFICATION

COMMUNICATION OF PHYSICAL PROPERTY, HEALTH, AND SAFETY INFORMATION IS A KEY FACTOR IN OUR PRODUCT SAFETY PROGRAM. WITH THIS INFORMATION YOU CAN BETTER FULFILL YOUR OBLIGATION TO EDUCATE EXPOSED PERSONNEL IN THE PROPER HANDLING TECHNIQUES REQUIRED TO MAINTAIN SAFETY IN THE WORKPLACE. LISTED IN THIS SECTION IS NFPA-HMIS CLASSIFICATION FOR THIS PRODUCT.

HMIS CLASSIFICATION CODE

Health:	1	SLIGHT HAZARD
Flammability:	4	SEVERE HAZARD
Reactivity:	C	MINIMAL HAZARD
Personal protection:	E	FACE SHIELD, GLOVES, APRON

THE ABOVE INFORMATION PERTAINS TO THIS PRODUCT AS CURRENTLY FORMULATED, AND IS BASED ON THE INFORMATION AVAILABLE AT THIS TIME. ADDITION OF REDUCERS OR OTHER ADDITIVES TO THIS PRODUCT MAY SUBSTANTIALLY ALTER THE COMPOSITION AND HAZARDS OF THE PRODUCT. SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND ASSUME NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION.

LINCOLN
ELECTRIC

Date: 8/25/93 MSDS No.: US-M205

Trade Name: Fleetweld SP

Sizes: All

MATERIAL SAFETY DATA SHEET

For U.S. Manufactured Welding Consumables and Related Products

Conforms to Hazard Communication Standard 29CFR 1910.1200 Rev. October, 1988

THE UNIVERSITY OF CHICAGO

Manufacturer/Supplier: The Lincoln Electric Company
22801 St. Clair Avenue
Cleveland, OH 44117-1199
(216) 481-8100

Product Type: Covered Electrode

Classification: AWS E6010

ON 11/22/74 PEOPLE WITH THE

IMPORTANT!

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information.

CAS Number shown is representative for the ingredients listed. All ingredients listed may not be present in all sizes.

- (1) The term 'hazardous' in 'Hazardous Materials' should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard.

Ingredients:	CAS No.	Wt. %	TLV ₃ mg/m ³	PEL ₃ mg/m ³	Supplemental Information:
Cellulose and other carbohydrates	65996-61-4	5	10*	10*	* Not listed. Nuisance value maximum is 10 mg/m ³ . PEL value for iron oxide is 10 mg/m ³ . TLV value for iron oxide is 5 mg/m ³
Silicates and other binders	1344-09-8	< 5	10*	10*	
Iron	7439-89-6	< 5	10*	10*	
Titanium dioxides (as Ti)***	13463-67-7	< 5	10	10	** As respirable dust.
Manganese and/or manganese alloys and compounds (as Mn)***	7439-96-5	1	1.0(c)	1.0(c)	
Magnesite	1309-48-4	1	10	15	*** Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.
Mineral silicates	1332-58-7	1	5**	5**	
Iron oxides (as Fe)	65996-74-9	< 0.5	5	10	
Limestone and/or calcium carbonate	1317-65-3	< 0.5	10	15	
Graphite	7782-42-5	< 0.5	2.5	2.5	
Carbon steel core wire	7439-89-6	85	10*	10*	(c) Values are for manganese fume. STEL (Short Term Exposure Limit) is 3.0 milligrams per cubic meter.

THE BOMBING OF HAZARD

Non Flammable; Welding arc and sparks can ignite combustibles and flammable products. See 249.1 referenced in Section VI.

Supersedes 1/15/80

(CONTINUED ON SIDE TWO)

Product: Fleetweld 5P

Date: 8/25/93

SECTION IV HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOC - (Not Otherwise Classified) is 5 mg/m³. ACGIH-1987-88 preface states that the TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may create one or more of the following health hazards:
Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion.
Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes.

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. Bronchitis and some lung fibrosis have been reported.

Arc Rays can injure eyes and burn skin.

Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

IF BREATHING IS DIFFICULT give oxygen. IF NOT BREATHING employ CPR (Cardiopulmonary Resuscitation) techniques. IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

SECTION V REACTION DATA

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of this product would include: Primarily iron oxide; secondarily complex oxides of manganese, silicon and sodium.

Maximum fume exposure guideline and PEL for this product is 5.0 milligrams per cubic meter.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.4, and F1.5, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

SECTION VI HANDLING AND STORAGE**CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE**

Read and understand the manufacturer's instructions and the precautionary label on the product. Request Lincoln Safety Publication E205. See American National Standard Z49.1, "Safety in Welding and Cutting" published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126 and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402 for more details on many of the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens shade number 14 or darker. Shield others by providing screens and flash goggles.

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to permit electrically live parts or electrodes to contact skin, or clothing or gloves if they are wet. Insulate from work and ground.

Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner unless otherwise noted.



Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON DELO 400 SAE 10W

PRODUCT NUMBER(S): CPS235109 CPS238050

COMPANY IDENTIFICATION

Chevron USA Products Company
Environmental, Safety, and Health
575 Market St., Room 2900
San Francisco, CA 94105-2856

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-1899
Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON DELO 400 SAE 10W

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
LUBRICATING BASE OIL			
SEVERELY REFINED PETROLEUM DISTILLATE			
	> 80.0%	5 mg/m3 (mist)	ACGIH TWA
		10 mg/m3 (mist)	ACGIH STEL
		5 mg/m3 (mist)	OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES INCLUDING THE FOLLOWING
< 20.0%

Revision Number: 1 Revision Date: 09/03/93 MSDS Number: 005616
NDA - No Data Available NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard
(29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology
and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-005051 (06-89)

Appendix33-001230

ZINC ALKYL DITHIOPHOSPHATE

Chemical Name: PHOSPHORODITHIOIC ACID,O,O-DI-C1-14-ALKYL ESTERS, ZINC SALT
CAS68649423 < 1.5%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS**EYE:**

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

4. FIRST AID MEASURES

EYE:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical

Revision Number: 1**Revision Date: 09/03/93****MSDS Number: 005616****NDA - No Data Available****NA - Not Applicable**

advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: (COC) 392F (195C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force. DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

Revision Number: 1

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NDA - No Data Available

NA - Not Applicable

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

ENGINEERING CONTROLS:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Dark brown liquid.

pH:	NDA
VAPOR PRESSURE:	NA
VAPOR DENSITY	
(AIR=1):	NA
BOILING POINT:	NA
FREEZING POINT:	NDA
MELTING POINT:	NA
SOLUBILITY:	Soluble in hydrocarbon solvents; insoluble in water.
SPECIFIC GRAVITY:	0.89 @ 15.6/15.6C
DENSITY:	NDA
EVAPORATION RATE:	NA
VISCOSITY:	45 cSt @ 40C
PERCENT VOLATILE	
(VOL):	NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

Revision Number: 1**Revision Date: 09/03/93****MSDS Number: 005616****NDA - No Data Available****NA - Not Applicable**

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

Revision Number: 1

Revision Date: 09/03/93

MSDS Number: 005616

NDA - No Data Available

NA - Not Applicable

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	NO
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	21=TSCA Sect 4(e)
02=MASS RTK	12=CERCLA 302.4	22=TSCA Sect 5(a)(e)(f)
03=NTP Carcinogen	13=MN RTK	23=TSCA Sect 6
04=CA Prop 65-Carcin	14=ACGIH TWA	24=TSCA Sect 12(b)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	25=TSCA Sect 8(a)
06=IARC Group 1	16=ACGIH Calc TLV	26=TSCA Sect 8(d)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	19=Chevron TWA	29=OSHA CEILING
09=SARA 302/304	20=EPA Carcinogen	30=Chevron STEL
10=PA RTK		

The following components of this material are found on the regulatory lists indicated.

PHOSPHORODITHIOIC ACID,O,O-DI-CL-14-ALKYL ESTERS, ZINC SALTS
is found on lists: 01,11,

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NDA - No Data Available	NA - Not Applicable	

SEVERELY REFINED PETROLEUM DISTILLATE
is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;
(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are
obtained using the guidelines or published evaluations prepared by the
National Fire Protection Association (NFPA) or the National Paint and
Coating Association (for HMIS ratings).

REVISION STATEMENT:

Revised for indexing purposes only.

The above information is based on the data of which we are aware and is
believed to be correct as of the date hereof. Since this information may
be applied under conditions beyond our control and with which we may be
unfamiliar and since data made available subsequent to the date hereof may
suggest modification of the information, we do not assume any responsibil-
ity for the results of its use. This information is furnished upon
condition that the person receiving it shall make his own determination
of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 09/03/93 MSDS Number: 005616
NDA - No Data Available NA - Not Applicable

) SOLVENT 66/3

UNOCAL[®]CHEMICALS
DISTRIBUTION

PRODUCT DESCRIPTION

Unocal Hydrocarbon Sales 140 Solvent is a medium boiling-range solvent consisting primarily of C10-C12 saturated hydrocarbons. UHS's 140 Solvent is specially treated to remove aromatics and olefins and meets the definition of non-photochemically reactive as defined by the South Coast Air Quality Management District (SCAQMD) Rule 102 and the Bay Area Air Quality Management District (BAAQMD) Regulation 8 (Previously Rule 56/Regulation 3). Product Code 11206.

140 SOLVENT 66/3

Specifications		Typical Properties	* ASTM Test
MANUFACTURER	LEMONT REFINERY		
PRODUCT NAME	140 SOLVENT 66/3		
API GRAVITY (60/60 F)	40 MINIMUM	47.0	D-297
SPECIFIC GRAVITY (60/60 F)		0.7927	D-891
DENSITY @ 60 F (15.6 C)	LB/GAL	6.60	
DISTILLATION, IBP	DEGF	380	D-850
DISTILLATION, 50%	DEGF	386	D-850
DISTILLATION, DE	DEGF	400	D-850
EVAPORATION RATE (nBUAC ₂)	410 MAXIMUM	0.08	
VAPOR PRESSURE @ 20 C	mm Hg	< 1	
VAPOR PRESSURE, REID	PSI	0.15	D-323
VISCOSITY @ 20 C	cst	1.72	D-445
KAURI-BUTANOL VALUE (KB)		31	D-1133
ANILINE POINT	DEGF	159	D-611
FLASH POINT (TCC)	DEGF	148	D-56
COLOR, SAYBOLT		+30	D-156
DOCTOR TEST		NEGATIVE	D-235
CORROSION, 3 HRS @ 212 F		1A	D-130
NONVOLATILE RESIDUE	g/100 ml	< 0.001	D-1353
ACIDITY OF RESIDUE		NEUTRAL	D-1093
PARAFFINS	VOL%	40.3	
CYCLOPARAFFINS	VOL%	59.1	
AROMATIC CONTENT	VOL%	< 1.0	
BENZENE CONTENT	PPM	< 2	D-2600
OLEFINS	VOL%	0.1	D-1159
SULFUR CONTENT	PPM	< 5.0	D-2622
ACIDITY (AS ACETIC ACID)	WT%	< 0.0010	D-1613
REFRACTIVE INDEX @ 20 C		1.4319	D-1218
SOLUBILITY PARAMETER	(cal/cc) ^{1/2}	7.7	

* American Society for Testing and M

UNOCAL[®]

140 SOLVENT 66/3

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CHEMICALS
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PRODUCT DESCRIPTION

Unocal Hydrocarbon Sales 140 Solvent is a medium boiling-range solvent consisting primarily of C10-C12 saturated hydrocarbons. UHS's 140 Solvent is specially treated to remove aromatics and olefins and meets the definition of non-photochemically reactive as defined by the South Coast Air Quality Management District (SCAQMD) Rule 102 and the Bay Area Air Quality Management District (BAAQMD) Regulation 8 (Previously Rule 56/Regulation 3). Product Code 11106.

140 SOLVENT 66/3

		Specifications	Typical Properties	* ASTM Test
MANUFACTURER		LEMONT REFINERY		
PRODUCT NAME		140 SOLVENT 66/3		
API GRAVITY (60/60 F)		40 MINIMUM	47.0	D-297
SPECIFIC GRAVITY (60/60 F)			0.7927	D-891
DENSITY @ 60 F (15.6 C)	LB/GAL		6.60	
DISTILLATION, IBP	DEGF		380	D-850
DISTILLATION, 50%	DEGF		386	D-850
DISTILLATION, DP	DEGF	410 MAXIMUM	400	D-850
EVAPORATION RATE (nBUAC ₂)			0.08	
VAPOR PRESSURE @ 20 C	mm Hg		< 1	
VAPOR PRESSURE, REID	PSI		0.15	D-323
VISCOSITY @ 20 C	cst		1.72	D-445
KAURI-BUTANOL VALUE (KB)			31	D-1133
ANILINE POINT	DEGF	170 MAXIMUM	159	D-611
FLASH POINT (TCC)	DEGF	142 MINIMUM	148	D-56
COLOR, SAYBOLT		+28 MINIMUM	+30	D-156
DOCTOR TEST			NEGATIVE	D-235
CORROSION, 3 HRS @ 212 F		1 MAXIMUM	1A	D-130
NONVOLATILE RESIDUE	g/100 ml	0.001 MAXIMUM	< 0.001	D-1353
ACIDITY OF RESIDUE			NEUTRAL	D-1093
PARAFFINS	VOL%		40.3	
CYCLOPARAFFINS	VOL%		59.1	
AROMATIC CONTENT	VOL%	3.0 % MAXIMUM	< 1.0	
BENZENE CONTENT	PPM		< 2	D-2600
OLEFINS	VOL%	1.0 % MAXIMUM	0.1	D-1159
SULFUR CONTENT	PPM	50 MAXIMUM	< 5.0	D-2622
ACIDITY (AS ACETIC ACID)	WT%	0.0010 MAXIMUM	< 0.0010	D-1613
REFRACTIVE INDEX @ 20 C			1.4319	D-1218
SOLUBILITY PARAMETER	(cal/cc) ^{1/2}		7.7	

* American Society for Testing and M

UNOCAL[®]

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT/MANUFACTURER'S IDENTITY

PRODUCT NAME: QUAT 400
 PRODUCT NUMBER: N.A.
 PRODUCT USE: Concentrated quaternary
 disinfectant/cleaner
 COMPANY:
 DYNACCO
 P.O. BOX 27
 MONROE WA98272
 EMERGENCY PHONE: 800-255-3924

PRODUCT I.D. NUMBER (PIN): N.A.
 WHMIS CLASS: D2B
 DOT HAZARD CLASS:
 Non-Hazardous
 DOT SHIPPING NAME:
 N.A.

H.M.I.S.

2	HEALTH	HAZARD RATING 4 = Extreme 3 = High 2 = Moderate 1 = Slight 0 = Insignificant
0	FIRE	
0	REACTIVITY	
B	MAXIMUM PERSONAL PROTECTION	

A = Goggles, B = Goggles & Gloves, C = Goggles, Gloves & Apron

ABBREVIATION KEY: N.A. = Not Applicable, N.E. = Not Established, N.D. = Not Determined

SECTION 2 - HAZARDOUS INGREDIENTS INFORMATION

HAZARDOUS CHEMICAL IDENTITY	CAS NO.	%	PEL	TLV	LD50	LC50
Water	7732-18-5	80-100	N.E.	N.E.	N.D.	N.D.
Quaternary ammonium chloride	5197-80-8	1-5	N.E.	N.E.	250mg/kg	86mg/l 1hr
Tetrasodium EDTA	64-02-8	1-5	N.E.	N.E.	4100mg/kg	N.D.
Nonionic surfactant	9016-45-9	1-5	N.E.	N.E.	N.D.	N.D.

This mixture does not contain components which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR, Part 372.

SECTION 3 - PHYSICAL DATA

Color and Odor: Pink - Citrus	Boiling Point: 212°F 100°C	Vapor Pressure (mm HG): <30	pH: 11.0 - 11.6 (1% pH 9.0)
Physical State: Liquid	Freezing Point: 32°F 0°C	Vapor Density (Air=1): <1	Specific Gravity: 1.03
Odor Threshold: N.A.	Water/Oil Distribution: N.A.	Evaporation Rate (Water=0.3): <0.4	Solubility in Water: Complete

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point and Method: N.A.	Autoignition Temperature: N.A.	Extinguishing Media: Use media proper to the primary cause of fire.
Flammable Limits: N.A.	LEL: N.A. UEL: N.A.	Special Fire Fighting Procedures: None
Hazardous Combustion Products: N.A.		Unusual Fire and Explosion Hazards: None

SECTION 5 - REACTIVITY DATA

Chemical Stability: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hazardous Decomposition of By-Products: None known
Incompatibility (Materials to Avoid): None known	Hazardous Polymerization: May Occur <input type="checkbox"/> Will Not Occur <input checked="" type="checkbox"/>

SECTION 6 - TOXICOLOGICAL PROPERTIES

Routes of Entry: Ingestion, Inhalation, Eyes	Toxicologically Synergistic Products: None known
Sensitization: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Medical Conditions Aggravated by Exposure: None known
Carcinogenicity: None	Teratogenicity: None
	Mutagenicity: None
	Reproductive Toxicity: None

EFFECTS OF OVEREXPOSURE (Acute and/or Chronic):

Eyes: May cause severe irritation, redness and possible corneal injury.
 Skin: May cause irritation.
 Ingestion: May cause gastrointestinal tract irritation and possible mucosal injury.
 Inhalation: Prolonged exposure in poorly ventilated area may irritate nasal mucous membranes.

SECTION 7 - PREVENTATIVE AND CONTROL MEASURES

Respiratory Protection: None normally required with adequate room ventilation.	Ventilation: Local Exhaust: <u>N.A.</u> Mechanical: <u>Acceptable</u>
Protective Gloves: Rubber to protect sensitive skin.	Eye Protection: Safety glasses if splashing is likely.
Protective Clothing and Equipment: As needed to prevent wetting of clothing.	Work and Hygienic Practices: Wash thoroughly after use.
Storage Requirements: Store in cool, dry area. Avoid contamination of food.	Other Requirements: Keep out of the reach of children.
Follow good housekeeping practices.	

Steps To Be Taken If Material Is Spilled Or Released: Collect and reuse if possible. Absorb on inert material (sand, clay, etc.) and place into container for proper disposal. Do not allow runoff into public waterways.
 Waste Disposal: Dispose of as permitted by all federal, provincial, state and local regulatory authorities. Triple rinse container. Do not reuse empty container.

SECTION 8 - EMERGENCY FIRST AID PROCEDURES

FIRST AID - NOTES TO PHYSICIAN:

Eyes: Flush with a large amount of water for 15 minutes holding eyelids open. Seek medical attention.
 Skin: Wash with mild soap and water.
 Ingestion: Give gelatin solution, egg whites or 2-3 large glasses of water. Seek medical attention.
 Inhalation: Remove to fresh air and rest. In all cases if symptoms persist, seek medical attention.
 Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

SECTION 9 - PREPARATION INFORMATION

Prepared By: Regulatory Affairs Department

Phone: (360) 794-8974

Date of Preparation: December, 1993

ACORD. CERTIFICATE OF INSURANCE

CSR CG ISSUE DATE (MM/DD/YY)
02/23/94
COMME-1**PRODUCER**

W. M. Bryan Associates, Inc.
1221 S. W. Yamhill, Suite 405
Portland OR 97205

Carol J. Gravatt
503-227-7494

INSURED

Commercial Iron Works, Inc.
Attn: Margaret Doyle
P. O. Box 61647
Vancouver WA 98666-1647

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND
CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE
DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE
POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY LETTER	A	Home Insurance Company
COMPANY LETTER	B	Safeco Insurance Company
COMPANY LETTER	C	
COMPANY LETTER	D	
COMPANY LETTER	E	

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A	GENERAL LIABILITY				GENERAL AGGREGATE \$1,000,000
	COMMERCIAL GENERAL LIABILITY	MHP922977	01/07/94	01/07/95	PRODUCTS-COMP/OP AGG. \$1,000,000
	CLAIMS MADE <input checked="" type="checkbox"/> OCCUR.	Marine Comprehensive Liability			PERSONAL & ADV. INJURY \$1,000,000
	OWNER'S & CONTRACTOR'S PROT.				EACH OCCURRENCE \$1,000,000
	<input checked="" type="checkbox"/> Ship Repair Legal				FIRE DAMAGE (Any one fire) \$
	<input checked="" type="checkbox"/> \$5,000 ded				MED. EXPENSE (Any one person) \$
R	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT \$1,000,000
	<input checked="" type="checkbox"/> ANY AUTO	BA8535931A	03/01/94	03/01/95	BODILY INJURY (Per person) \$
	ALL OWNED AUTOS				BODILY INJURY (Per accident) \$
	SCHEDULED AUTOS				PROPERTY DAMAGE \$
	HIRED AUTOS				
	NON-OWNED AUTOS				
	GARAGE LIABILITY				
	EXCESS LIABILITY				EACH OCCURRENCE \$
	UMBRELLA FORM				AGGREGATE \$
	OTHER THAN UMBRELLA FORM				
	WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY LIMITS
					EACH ACCIDENT \$
					DISEASE— POLICY LIMIT \$
					DISEASE— EACH EMPLOYEE \$
	OTHER				

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
Re: All operations of the Insured

CERTIFICATE HOLDER

Ash Grove Cement Company
Attn: Dick Gable
P. O. Box 83007
Portland OR 97283-0007

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Carol J. Gravatt



PRODUCT HAZARD RATINGS: Health = 2, Fire = 2,

Reactivity = 0, Protective Equipment = *B (HMIG)



IDENTITY
SIGHT WINDOW CLEANER

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufactured for:
DYNACCO, INC.

Address (Number, Street, City, State, and ZIP Code)
17461 147TH ST S.E.

MONROE, WA 98272

Emergency Telephone Number
CHEM-TEL (800) 255-3924

Telephone Number for Information
(360) 794-8974

Date Prepared
MAY 11, 1994

Section II - Hazardous Ingredients/Identity Information

Chemical Names	Exposure Limits (LD50-Oral Rat)	SARA Title III SEC 313	ACGIH TLV/TWA	OSHA PEL	% By Wt.
2 Butoxy Ethanol (CAS# 111-76-2)	1.480g/kg	Yes	25ppm	25ppm (skin)	3.9
Ethyl Alcohol (CAS# 64-17-5)	13.7g/kg	-	1000	1000	10-20
Methyl Alcohol (CAS# 67-56-1)	5.6g/kg	Yes	200	200	0.8
Deionized Water (CAS# 7732-18-5)		-	-	-	70-75
Liquefied Petroleum Gas (CAS# 68476-85-7) NE		-	1000	1000	1-5

Unidentified ingredients are not considered hazardous under the Federal Hazard Communication Standard.

Components Listed As A Suspected Carcinogen: None

Section III - Physical Characteristics

Boiling Point: NA Vapor Pressure (psig): 140 @130F Specific Gravity (H2O=1): <1
Solubility/Water: Complete Vapor Density (AIR=1): >1 Evaporation Rate (Ether=1): <1
Appearance and Odor: Wide hollow cone spray; semi-stable foam; solvent/floral odor

Section IV - Fire and Explosion Hazard Data

Aerosol Flammability: This product is considered to be non flammable as described in 16CFR 1500.45.

Flammable Limits - % Volume In Air (Propellant): LEL: 1.8 UEL: 9.2

Extinguishing Media: Carbon dioxide, foam and/or dry chemical may be used.

Special Fire Fighting Procedures: Containers should be cooled with water to prevent vapor pressure build up. Use equipment or shielding, as required, to protect personnel from bursting, rupturing or venting containers.

Unusual Fire and Explosion Hazards: At elevated temperatures (over 54C-130F) containers exposed to direct flame or heat contact should be cooled with water to prevent weakening of container structure.

Section V - Reactivity Data

Stability: Stable

Hazardous Polymerization: NA

Incompatibility (Materials to Avoid): Strong oxidizing agents, heat and open flame.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide and additional toxic chemicals may be formed in small amounts.

Conditions to Avoid: Do not store above 54C-130F. Keep away from heat, direct sunlight, open flames or sparks. Dropping of containers may cause bursting.

DYN. SIGHT WIND CLN 190Z

Section VI - Health Hazard Data

Route(s) of Entry - Inhalation: X Eyes: X Skin: X Ingestion: X

Signs and Symptoms of Exposure: Respiratory irritation. High concentrations may produce headache, dizziness, and nausea. Prolonged or repeated skin contact may lead to drying, irritation and dermatitis. Possible skin absorption. Eye contact may cause burning and irritation. -This product contains 2-Butoxyethanol, which if ingested in significant quantities may result in red blood cell hemolysis.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin or eye disorders may be aggravated by this product.

Emergency and First Aid Procedures: Eye Contact: Flush eyes with plenty of water for 15 minutes while holding eyelids open. Get prompt medical attention. Skin Contact: Remove contaminated clothing. Flush skin with water, follow by washing with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. Inhalation: Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention. Ingestion: Contact local poison control center or physician IMMEDIATELY.

Section VII - Precautions for Safe Handling and Use

Releases or Spilled: Remove all sources of ignition and ventilate area. Soak up spill with an inert absorbent and place into a designated disposal container. Consult local regulatory agency for proper disposition of material.

Waste Disposal Method: Do not puncture or incinerate containers. When contents are depleted continue to depress button until all gas is expelled. Dispose of container in accordance with local, state, and federal regulations.

Handling And Storing: Avoid breathing vapor. Keep away from heat and flame. Use with adequate ventilation. Do not puncture or incinerate containers. Do not expose to direct sunlight or store at temperatures above 130F (54C). Store as Level 1 Aerosol (NFPA 30B).

Other Precautions: Please read and follow the directions on the product label; they are your best guide to using this product in the most effective way, and give the necessary safety precautions to protect your health.

Section VIII - Employee Protection

Respiratory Protection (Type): None required if good ventilation is maintained. If exposure exceeds occupational exposure limits (Sec. II), use a NIOSH approved respirator to prevent overexposure.

Ventilation: Local exhaust is adequate under normal conditions, mechanical ventilation is optional.

Protective Gloves: Chemical resistant gloves*.

Eye Protection: Chemical safety glasses are recommended*.

Other Protective Clothing or Equipment: Wear impervious clothing to prevent skin contact.

Work/Hygienic Practices: Ensure strict sanitary conditions are conformed to when working around chemicals. Protective clothing and equipment should be in accordance with 29 CFR 1910.132 and CFR 1910.133.

Section IX - Other Regulatory Controls

Governmental Listings: Ingredients of this product are listed on the EPA/TSCA Inventory of Chemical Substances.

Section X - Transportation (D.O.T. Classification)

Shipping Name: Consumer Commodity

Hazard Class: ORM-D

NG-- Negligible NA-- Not Applicable NE-- Not Established UN-- Unavailable ND-- Not Determined

While the information set forth herein is believed to be accurate as of the date hereof, the Company makes no warranty or guarantee, express or implied, and disclaims all liability arising out of the use of this information.

HMIS RATING: (Based on Aerosol Concentrate): 0-Minimal; 1-Slight; 2-Moderate; 3-Serious; 4-Extreme

HEALTH 0
FIRE 1
REACTIVITY 1
PERSONAL PROTECTION: B

MATERIAL SAFETY DATA SHEET

IDENTITY **GLIDE** Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufactured for DYNACCO, INC.	Emergency Telephone Number CHEM-TEL (800) 255-3924
Address (Number, Street, City, State, and ZIP Code) 17461 147TH ST S.E.	Telephone Number for Information (360) 794-8974
MONROE, WA 98272	Date Prepared JUNE 16, 1994

SECTION II - INGREDIENTS

CHEMICAL NAME	CAS NO.	% WT	313/CHEM	PEL	SKIN	TWA-TLV	CARCINOGEN
Isopropyl Alcohol	67-63-0	05-10	NO	400 ppm	NO	400 ppm	NO
Polydimethylsiloxane	63148-62-9	01-05	NO	N/E	NO	N/E	NO
Liquified Petroleum Gas	68476-85-7	01-05	NO	1000 ppm	NO	1000 ppm	NO

SECTION III - PHYSICAL DATA

DATA BELOW BASED ON AEROSOL CONCENTRATE ONLY:

Boiling Point: -212°F
Density (Air=1): >1
Solubility in Water: Complete
pH: Neutral
Specific Gravity (H₂O = 1) @ 75°F: 0.983

DATA BELOW BASED ON TOTAL CONTENTS:

Vapor Pressure of Can (psig @ 70°F): 56
Appearance/Odor: White Foam with Perfume Odor

SECTION IV - FIRE AND EXPLOSION DATA

Flash Point (OF CONCENTRATE ONLY): None to Boiling (212°F)
Flammability as per USA Flame Projection Test: Non-Flammable Spray
Extinguishing Media: Foam, CO₂, Dry Media

Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective clothing. Cool fire exposed containers to prevent rupturing.

Unusual Fire and Explosion Hazards: Exposure to temperatures above 120°F may cause bursting.

SECTION V- REACTIVITY DATA

Stability: Stable
Hazardous Polymerization: Will Not Occur
Incompatibility: Avoid contact with strong oxidizing agents
Hazardous Decomposition Products: Carbon Dioxide, Carbon Monoxide

SECTION VI - STORAGE AND HANDLING

KEEP OUT OF THE REACH OF CHILDREN
For Industrial & Institutional Use Only.
Store in a cool, dry area away from heat or open flame.
Do not store at temperatures above 120°F.
NFPA Code 308 Rating: Level 1 Aerosol

SECTION VII - HEALTH AND FIRST AID

PRIMARY ROUTES OF ENTRY & EFFECTS OF OVER EXPOSURE

EYES: May cause slight irritation but does not injure eye tissue.

SKIN: None, prolonged contact may cause irritation

INHALATION: Inhalation of mist can cause irritation of nasal and respiratory passages. Abusive or excessive inhalation may cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects.

INGESTION: Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis. Minimal toxicity.

FIRST AID PROCEDURES

EYES: Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If irritation persists get medical attention immediately.

SKIN: Wash with soap and water. If irritation persists seek medical attention.

INHALATION: Remove to fresh air. Seek medical attention immediately. If breathing stops give artificial respiration.

INGESTION: Do not induce vomiting. Seek medical attention immediately.

TAYLORMADE PRODUCTS, INC.

P.O. Box 548

Scappoose, Oregon 97056

October 31, 1994

Pallets

New
Used
Recycled

(503) 223-7041 Portland
(503) 543-7232 Scappoose

Dear Valued Customer:

As you may be aware, the Occupational Safety Hazard Administration (OSHA) requires that employers provide information and legible warnings for hazardous chemicals to which their workers are exposed. Effective August 11, wood dust generated from the sawing, sanding or shaping of non-treated wood or wood products is considered a hazardous chemical and, therefore, the OSHA Hazard Communication Standard applies.

Please take note of the two documents that are enclosed with this letter.

- 1) A Material Safety Data Sheet (MSDS)
- 2) A Wood Dust Warning Label

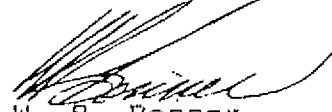
In order for your company to comply with the OSHA Standard, we recommend that you review and make available to those of your workers who will be exposed to wood dust the information contained within the MSDS. PLEASE NOTE THAT THE INFORMATION WITHIN THE MSDS APPLIES ONLY TO NON-TREATED WOOD PRODUCTS.

Additionally, we recommend that you post copies or facsimiles of the enclosed Warning Label prominently at all work locations where exposure to wood dust will occur. OSHA requires the posting of this information, since solid wood does not come in a container (such as a drum or canister) that can readily be labeled.

Finally, OSHA requires that, should the wood products handled by your company be passed "downstream" to customers whose employees will process the wood in such a way that will generate wood dust, you must also transmit copies of the MSDS and Warning Label to those customers, just as we have sent them to you.

To the best of our knowledge, by following the above procedures, you will be in compliance with the new OSHA rules.

Sincerely,
TAYLORMADE PRODUCTS, INC.



W. R. Bonner
Vice President

WRB/bb

Appendix33-001244

MATERIAL SAFETY DATA SHEET

WOOD DUST

For Howard

Section 1. Product Identification

Product Name(s): Wood Dust

Synonyms: Finely divided wood particles, powdered wood, sawdust, wood shavings.

Product Description: Mechanical or abrasive activities such as cutting, shaping, drilling, sanding or sawing conducted on untreated wood and untreated wood products can generate wood dust.

Product Use: A byproduct; not generated for specific use.

Preparation Date: August 10, 1994

Section 2. Hazardous Ingredients

Substance	CAS No.	Percent	Exposure Limits
Wood Dust	None	100	1992 ACGIH TLVs TWA: 1 mg/m ³ * TWA: 5 mg/m ³ + STEL: 10mg/m ³ ++
			OSILA PELs* 8hr.TWA:5mg/m ³ + STEL: 10 mg/m ³ + 8-hr. TWA:2.5 mg/m ³ ++

* Wood dust (certain hardwoods such as beech and oak.)

+ Wood dust, softwood.

++ Wood dust, western red cedar.

Wood dust is primarily composed of cellulose, hemicellulose and lignin. There are also several compounds (mostly organic known as wood extractives.)

** Based on OSHA PELs 1989.

Section 3. Physical Data

Boiling Point: NAP

Specific Gravity: Variable

(Dependent on wood specified and moisture

content.)

Vapour Pressure: NAP

Vapour Density: NAP

Melting Point: NAP

Solubility In H₂O (% By Wt.): Variable

Evaporation Rate (Butyl Acetate = 1): NAP

% Volatiles by Vol.: Variable

Appearance and Odour: Light to dark coloured granular solid. Colour and odour are dependent on the wood species and time since dust was generated.

Section 4. Fire & Explosion Data

Flash Point: NAP

Autoignition Temperature: Variable* (~400-500°F)

Flammable Limits:

LEL: 40 grams/m³ See Unusual Fire and Explosion Hazards.

UEL: Variable *

*The autoignition temperature and upper explosive limits for wood dust vary with exact composition, particle size, moisture level and rate of heating and dust concentration.

Extinguishing Media: Water, carbon dioxide, sand.

Hazardous Combustion Products: Acrid smoke, carbon monoxide, aldehydes and organic acids.

Unusual Fire & Explosion Hazards: Wood products do not normally constitute an explosion hazard. Mechanical or abrasive activities which produce wood dust as a by-product may present a severe explosion hazard if a dust cloud contacts an ignition source. Hot humid conditions may result in spontaneous combustion of accumulated wood dust.

Partially burned or scorched wood dust can explode if dispersed in air.

An airborne concentration of 40 grams of dust per cubic meter of air is frequently used as the LEL for wood dusts.

Special Fire Fighting Procedures: Use water to wet down wood dust to reduce the likelihood of ignition or dispersion of dust into the air. Remove burned or wet dust to open area after fire is extinguished. Self-contained breathing apparatus (SCBA) is recommended when fighting fire.

Section 5. Reactivity Data

Stability/Polymerization: Product is stable under normal conditions.

Incompatibility: Avoid contact with oxidizing agents and drying oils. Avoid open flame. Product may ignite at temperatures in excess of 400°F.

Hazardous Decomposition Products: Thermal oxidative decomposition can produce irritating and toxic vapours and gases, including carbon monoxide, aldehydes, organic acids and other volatile organic fragments.

Hazardous Polymerization: NAP.

Section 6. Health Hazard Data

Primary Routes of Entry: Inhalation, skin and eye contact.

Signs and symptoms of Exposure: Wood dust can cause skin rashes, allergic reactions, eye and nose inflammation, respiratory irritation, asthma and even certain rare cancers.

Inhalation: Respiratory ailments may occur from dust inhalation and include irritation, sore throat, bronchitis, asthma and reduced pulmonary function. A number of wood dusts including oak, mahogany, redwood and some exotic woods have been reported to cause hypersensitivity reaction leading to asthma.

Skin: Wood dust(s) of certain species can elicit allergic contact dermatitis in sensitized

individuals, as well as mechanical irritation resulting in erythema and hives.

Eye: Direct contact can cause irritation and conjunctivitis.

Ingestion: Not expected under normal use.

Skin Absorption: Not known to occur under normal use.

Chronic Effects: Wood dust, depending on species, may cause allergic contact dermatitis with prolonged, repetitive contact and cause respiratory sensitization after prolonged exposure to elevated dust levels. Inhalation of wood dusts (certain European hardwood: oak and beech), have been implicated in causing cancer of nasal cavity and paranasal sinuses.

Medical Conditions Aggravated by Long-Term Exposures: Skin and respiratory disorders.

Carcinogenicity: Wood dust is not listed as a carcinogen by IARC, NTP, ACGIH or OSHA. However, IARC has concluded that there is sufficient evidence that nasal adenocarcinomas have been caused by exposure in the furniture making industry. The carcinogenic agent(s) in wood dust have not been identified. NIOSH lists wood dusts as Class-X (carcinogen defined without further categorization).

Section 7. Safe Handling Procedures/Control Measures

Engineering Controls: To avoid static sparks, electrically ground and bond all equipment used in and around processes that involve wood dust generation. Enclose processes where possible to prevent dust dispersion in the workplace.

Ventilation: Provide general or local ventilation systems to maintain airborne concentrations of wood dust below applicable provincial or federal standards. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: consider preplacement and periodic medical exams of exposed workers with emphasis on the eye, skin and respiratory tract.

Housekeeping: Provisions should be made for the cleaning of the worksite at frequent intervals to remove the accumulations of finely divided wood dust that might be dislodged and lead to an explosion.

Respiratory Protection: Wear NIOSH approved breathing apparatus for exposure to wood dust. Air purifying dust/mist respirators are required if airborne concentrations exceed applicable provincial and federal standards.

Protective Clothing / Equipment: Wear protective gloves, boots aprons and gauntlets to prevent prolonged or repeated skin contact. Wear protective eye glasses or chemical safety goggles in dusty environments.

Spill / Leak Procedures: Wood dust should be cleaned up frequently. To avoid dispersing the dusts in air, scoop up into containers or vacuum with appropriate filter. Damp mop any residue. Place recovered wood dust in a container for proper disposal.

Storage Requirements: If wood dust is stored while awaiting disposal, keep in a cool area away from heat, ignition sources and oxidizing materials.

Waste Disposal: If disposed of, in its purchased form, incineration is preferable. Dryland disposal is acceptable in most states. It is however the user's responsibility to determine at the time of disposal whether your product meets RCRA criteria for hazardous waste. Waste material should be packaged, labeled, transported and disposed of or reclaimed in accordance with local, state, provincial and federal regulations.

Section 8. First Aid Measures

Inhalation: Remove exposed person to fresh air. Seek medical attention if persistent irritation, severe coughing or breathing difficulty occurs.

Eyes: flush with water to remove dust particles. If irritation persists, consult a physician.

Skin: Rinse away any loose dust material and wash exposed area with soap and water. Consult a physician if dermatitis or other skin disorders occur.

Section 9. User's Responsibility

The information contained in this material safety data sheet has been compiled from sources believed to be accurate and reliable to be otherwise technically correct. It is the user's responsibility to determine if this information is suitable for their applications and to follow safety precautions as may be necessary in all circumstances. This material safety data sheet does not create a warranty of any kind concerning the accuracy or completeness of the information contained herein and the issuer hereof will not be liable for claims relating to any party's use of reliance on this information however based. The user has the responsibility to make sure that this material safety data sheet is the most up-to-date issued. It is the responsibility of the user to comply with any local, state and federal regulations concerning uses of this product. It is the responsibility of the buyer to research and understand safe methods of storing, handling and disposing of this product.

Section 10. Common Terms

ACGIH	American Conference of Government Industrial Hygienists
CAS No.	Chemicals Abstracts System Number
IARC	International Agency for Research on Cancer
NAP	Not Applicable
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
STEL	Short Term Exposure (8 hours)

Howard

CAUTION!

WOOD DUST

FOR ALL UNTREATED WOOD & UNTREATED WOOD PRODUCTS

SAWING, SANDING OR MACHINING WOOD PRODUCTS CAN PRODUCE WOOD DUST WHICH CAN CAUSE A FLAMMABLE OR EXPLOSIVE HAZARD.

WOOD DUST MAY CAUSE LUNG, UPPER RESPIRATORY TRACT, EYE AND SKIN IRRITATION. SOME WOOD SPECIES MAY CAUSE DERMATITIS AND / OR RESPIRATORY ALLERGIC EFFECTS.

- Avoid dust contact with ignition source.
- Sweep or vacuum dust for recovery or disposal.
- Avoid prolonged or repeated breathing of wood dust in air.
- Avoid dust contact with eyes and skin.

FIRST AID: If inhaled, remove to fresh air. In case of contact, flush eyes and skin with water. If irritation persists, call a physician.

For additional information, see the MATERIAL SAFETY DATA SHEET.

Page 1

MATERIAL SAFETY DATA SHEET

MSDS NO CODE: 0016

DENNISON DIVISION, AVERY-DENNISON INC

1 Clark Hill

Framingham, MA 01701

Revision Date: 11/01/94

Last Revision Date: 02/21/92

Telephone Number: 1-800-252-8379

EMERGENCY MEDICAL TELEPHONE NUMBER: 508/879-0511, X4636

SECTION I PRODUCT IDENTIFICATION

Avery-Dennison Identity: MARKS-A-LOT INKS

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Material Name	CAS #	OSHA PEL PPM	ACGIH TL PPM
N-PROPANOL ALCOHOL	71-23-8	200	200

All of the chemicals listed above are in compliance with OSHA, CFR, 1910.1200.
A finished marker contains a substantially lower percentage by weight of each chemical and has the ink held within an absorbent material so it will be released from the marker only through the writing nib.

SECTION III PHYSICAL DATA

Boiling Point: 208 F	Appearance: COLORED LIQUID
Specific Gravity: .81 @ 20 C	Odor: ALCOHOL
Vapor Pressure (mmHg): 14	Water Solubility: DISPERSABLE
Vapor Density (Air=1): 2.1	Evaporation Rate (Butyl Acetate=1): 1.10
Melting Point: N/AP	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point: 74 F Method Used: TCC
Flammable Limits: 2.1-13.5 % Extinguishing Media: WATER, FOAM, CARBON DIOXIDE, DRY CHEMICAL
Fire Fighting Procedure: SELF CONTAINED BREATHING APPARATUS FOR FIRE FIGHTERS, FLOOD
WITH WATER FROM A SAFE DISTANCE
Unusual Hazards: FLAMMABLE AND MAY BE IGNITED BY HEAT OR FLAME

SECTION V REACTIVITY DATA

Stability: YES
Conditions to avoid: HEAT AND FLAME
Incompatibility: STRONG ACIDS OR BASES, OXIDIZERS, OR HALOGENS
Hazardous Decomposition: CARBON MONOXIDE/OR CARBON DIOXIDE
Hazardous Polymerization: WILL NOT OCCUR

SECTION VI HEALTH HAZARD DATA

Symptoms of overexposure for each potential route of exposure:

Inhaled: EXCESSIVE CONCENTRATIONS OF VAPORS MAY CAUSE IRRITATION OF NOSE AND THROAT,
MAY CAUSE DROWSINESS, DIZZINESS, AND FATIGUE
Eye Contact: DIRECT CONTACT MAY CAUSE EYE IRRITATION, BURNING, TEARING,
REDNESS AND SWELLING

N/AP - Not Applicable

N/E - Not Established

Form MSD57L

AVERY DENNISON MATERIAL SAFETY DATA SHEET

REV. 11/01/94

Page 2

MATERIAL SAFETY DATA SHEET

PRODUCT CODE: 0016 MARKS-A-LOT INKS
DENNISON DIVISION, AVERY-DENNISON INC

Revision Date 11/01/94

SECTION VI HEALTH HAZARD DATA

Symptoms of overexposure for each potential route of exposure:

Absorbed thru Skin: DIRECT CONTACT MAY CAUSE REDNESS, BURNING, DRYING, AND
CRACKING OF THE SKIN

Ingestion: N/AP

Health effects or Risks from Exposure

Medical Conditions Aggravated by Exposure

Chronic: N/AP

Carcinogenic: NO

This product contains material that are listed on the list below:

NTP: NO

IAAC: NO

OSHA: NO

S.A.R.A INFORMATION: This product is not reportable under SARA Title III, Section 313

TOXIC INFORMATION: NON-TOXIC BY INGESTION PER FHSA, TITLE 16, CHAPTER 11

EMERGENCY FIRST AID PROCEDURES

EYE CONTACT: DIRECT CONTACT, FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF
IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION

SKIN CONTACT: THOROUGHLY WASH WITH SOAP AND WATER

INHALED: REMOVE TO FRESH AIR. IF SYMPTOMS PERSIST, SEEK MEDICAL
ATTENTION

INGESTION: N/AP

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

SPILL OR LEAK Procedures: N/AP

WASTE DISPOSAL: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, FEDERAL
REGULATIONS

STORAGE: STORE IN A COOL, DRY PLACE AWAY FROM SOURCES OF IGNITION

SECTION VIII CONTROL MEASURES

WORK PRACTICES: OBSERVE ORDINARY MEASURES OF PERSONAL HYGIENE

To the best of our knowledge this information is accurate; however, we do not, and cannot warrant or guarantee its accuracy and cannot be liable for any damages, consequential or actual which might result from any reliance therein. This MSDS was prepared to comply with the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Page 1

MATERIAL SAFETY DATA SHEET

MSDS NO CODE: 0023

DENNISON DIVISION, AVERY-DENNISON INC
1 Clark Hill
Framingham, MA 01701

Revision Date: 07/30/93
Last Issue Date: 02/21/92
Telephone Number: 508/879-0511, 14711
EMERGENCY MEDICAL TELEPHONE NUMBER: 508/879-0511, 14616

SECTION I PRODUCT IDENTIFICATION

Avery-Dennison Identity: STAMP PAD INKS

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Material Name	CAS #	OSHA PEL	ACGIH TLV
ETHYLENE GLYCOL	107-21-1	PPM 50 PPM	PPM 50 PPM

All of the chemicals listed above are in compliance with OSHA, CFR, 1910.1200.
A finished stamp pad contains a substantially lower percentage by weight of each chemical and has the ink held within an absorbent material.

SECTION III PHYSICAL DATA

Boiling Point: 365 F	Appearance: LIQUID-COLORED
Specific Gravity: 1.04 @ 20C	Odor: MILD ODOR
Vapor Pressure (mmHg): 0.22 @ 20C	Water Solubility: COMPLETE
Vapor Density (Air=1): N/A	Evaporation Rate (Butyl Acetate=1): < 0.01
Melting Point: N/A	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point: 225 F	Method Used: PMOC
Flammable Limits: N/A	Extinguishing Media: FOAM, CARBON DIOXIDE, DRY CHEMICAL
Fire Fighting Procedure: WEAR SELF-CONTAINED BREATHING APPARATUS, USE WATER SPRAY TO COOL NEARBY CONTAINERS	
Unusual Hazards: NONE	

SECTION V REACTIVITY DATA

Stability: YES
Conditions to avoid: N/A
Incompatibility: STRONG OXIDISING AGENTS
Hazardous Decomposition: MAY FORM TOXIC MATERIALS, CARBON DIOXIDE OR CARBON MONOXIDE
Hazardous Polymerization: WILL NOT OCCUR

SECTION VI HEALTH HAZARD DATA

Symptoms of overexposure for each potential route of exposure: _____
Inhaled: NO SYMPTOMS EXPECTED

eye Contact: MAY CAUSE EYE IRRITATION

N/A - Not Applicable

N/E - Not Established

Form MSDS8L

Page 2

MATERIAL SAFETY DATA SHEET

PRODUCT CODE: 0023

JENNISON DIVISION, AVERY-DENNISON INC

Revision Date: 07/30/93

SECTION VI HEALTH HAZARD DATA

Symptoms of overexposure for each potential route of exposure:

Absorbed thru skin: NO EVIDENCE OF HARMFUL EFFECTS

Ingestion: MAY CAUSE ABDOMINAL DISCOMFORT OR PAIN, NAUSEA, VOMITING,
DIZZINESS, DROWSINESS, CENTRAL NERVOUS SYSTEM EFFECTS.

Health effects or Risks from Exposure

Medical Conditions Aggravated by Exposure

Chronic: NO

Carcinogenic: NO

This product contains material that are listed on the list below:

NTP: NO

IARC: NO

OSHA: NO

S.A.R.A INFORMATION: This product is not reportable under SARA Title III, Section 313

TOXIC INFORMATION:

EMERGENCY FIRST AID PROCEDURES

EYE CONTACT: FLUSH WITH LARGE AMOUNTS OF WATER, IF EYE IRRITATION
OCCURS, GET MEDICAL ATTENTION

SKIN CONTACT: THOROUGHLY WASH WITH SOAP AND WATER

INHALED: REMOVE TO FRESH AIR, OBTAIN MEDICAL ATTENTION IF SYMPTOMS PERSIST.

INGESTION: IF CONSCIOUS, GIVE TWO GLASSES OF WATER, INDUCE VOMITING, AND OBTAIN MEDICAL
ATTENTION WITHOUT DELAY.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

SPILL OR LEAK Procedures: ABSORB LIQUID ON PAPER OR OTHER ABSORBENT MATERIAL, FLUSH
WITH WATER

WASTE DISPOSAL: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, FEDERAL
REGULATIONS

STORAGE: N/A

SECTION VIII CONTROL MEASURES

WORK PRACTICES: OBSERVE ORDINARY MEASURES OF PERSONAL HYGIENE

To the best of our knowledge this information is accurate; however, we do not, and cannot
warrant or guarantee its accuracy and cannot be liable for any damages, consequential
or actual which might result from any reliance therein. This MSDS was prepared to comply
with the OSHA Hazard Communication Standard (29 CFR 1910.1200).

N/A Not Applicable

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MATERIAL SAFETY DATA SHEET

PRODUCT CODE: 0016 MARKS-A-LOT INKS
DENNISON DIVISION, AVERY-DENNISON INC

Revision Date 11/01/94

SECTION VI HEALTH HAZARD DATA

 Symptoms of overexposure for each potential route of exposure:

Absorbed thru skin: DIRECT CONTACT MAY CAUSE REDNESS, BURNING, DRYING, AND CRACKING OF THE SKIN

Ingestion: N/AP

Health effects or Risks from Exposure

Medical Conditions Aggravated by Exposure

Chronic: N/A

Carcinogenicity NO

This product contains material that are listed on the list below:

NTF: NO

IARC: NO

OSHA: NO

S.A.R.A. INFORMATION: This product is not reportable under SARA Title III, Section 313

TOXIC INFORMATION: NON-TOXIC BY INGESTION PER FHSA, TITLE 16, CHAPTER II

EMERGENCY FIRST AID PROCEDURES

EYE CONTACT: DIRECT CONTACT, FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION

SKIN CONTACT: THOROUGHLY WASH WITH SOAP AND WATER

INEALED: REMOVE TO FRESH AIR. IF SYMPTOMS PERSIST, SEEK MEDICAL ATTENTION

INGESTION: N/AP

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

SPILL OR LEAK Procedures: N/A

WASTE DISPOSAL: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE, FEDERAL REGULATIONS

STORAGE: STORE IN A COOL, DRY PLACE AWAY FROM SOURCES OF IGNITION

SECTION VIII CONTROL MEASURES

WORK PRACTICES: OBSERVE ORDINARY MEASURES OF PERSONAL HYGIENE

To the best of our knowledge this information is accurate; however, we do not, and cannot warrant or guarantee its accuracy and cannot be liable for any damages, consequential or actual which might result from any reliance therein. This MSDS was prepared to comply with the OSHA Hazard Communication Standard (29 CFR 1910.1200).



IDENTITY (As Used on Label and List)

SC-575

None: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name Apollo Chemical & Equipment Company	Emergency Telephone Number (800) 535-5053
Address (Number, Street, City, State, and ZIP Code) 6647 NE 47th Avenue	Telephone Number for Information (503) 249-8455
Portland, Oregon 97218	Date Prepared
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended (ppm, % (optional))
2-Butoxyethanol CAS #111-76-2	50	25	
Sodium Metasilicate CAS #6834-92-0		2mg/m ³ for powder only	

HMIS	0 = Minimal
Health 1	1 = Slight
Fire 2	2 = Moderate
Reactivity 0	3 = Serious
Specific Hazard Combustible Liquid	4 = Severe

Section III — Physical/Chemical Characteristics

Boiling Point About 210°	Specific Gravity (H ₂ O = 1) 1.016
Vapor Pressure (mm Hg.) NA	Melting Point N/A
Vapor Density (AIR = 1) 1.116	Evaporation Rate (Butyl Acetate = 1) NA

Solubility in Water

Complete

Appearance and Odor

Reddish Pink - Slight sour smell

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) 165° F TCC	Flammable Limits	LEL	UEL
Extinguishing Media Water spray, dry chemical, chemical foam, carbon dioxide			
Special Fire Fighting Procedures Use self-contained breathing apparatus with full face piece			
Unusual Fire and Explosion Hazards None			

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072



IDENTITY (As Used on Label and LHS)

SC-575

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name Apollo Chemical & Equipment Company	Emergency Telephone Number (800) 535-5053
Address (Number, Street, City, State, and ZIP Code) 6647 NE 47th Avenue	Telephone Number for Information (503) 249-8455
Portland, Oregon 97218	Date Prepared
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended (optional)
2-Butoxyethanol CAS #111-76-2	50	25	
Sodium Metasilicate CAS #6834-92-0		2mg/m ³ for powder only	

HMIS	0 = Minimal
Health 1	1 = Slight
Fire 2	2 = Moderate
Reactivity 0	3 = Serious
Specific Hazard Combustible Liquid	4 = Severe

Section III — Physical/Chemical Characteristics

Boiling Point About 210°	Specific Gravity (H ₂ O = 1) 1.016
Vapor Pressure (mm Hg.) NA	Melting Point N/A
Vapor Density (AIR = 1) 1.116	Evaporation Rate (Butyl Acetate = 1) NA
Solubility in Water Complete	
Appearance and Odor Reddish Pink - Slight sour smell	

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) 165° F TCC	Flammable Limits	LEL	UEL
Extinguishing Media Water spray, dry chemical, chemical foam, carbon dioxide			
Special Fire Fighting Procedures Use self-contained breathing apparatus with full face piece			
Usual Fire and Explosion Hazards None			

(Reproduce locally)

Revised January 3, 1995

N/A=Not Applicable
NA=Not Available

OSHA 174, Sept. 1985

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	XX	Avoid repeated freeze and thaw cycles

Incompatibility (Materials to Avoid)

Acids, strong oxidizing agents

Hazardous Decomposition or Byproducts

Carbon monoxide and/or carbon dioxide

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	XX	

Section VI — Health Hazard Data

Routes of Entry:	Inhalation?	Skin?	Ingestion?
	X	X	X

Health Hazards (Acute and Chronic)

May cause eye or skin irritation. Ingestion may cause nausea or diarrhea. Ingestion may also cause irritation or burns to mouth, throat, and esophagus. Vapors or absorption of 2-Butoxyethanol through the skin may cause headache, dizziness, or nausea.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
------------------	------	------------------	-----------------

Contains no known or suspected carcinogens

Signs and Symptoms of Exposure

Medical Conditions

Generally Aggravated by Exposure Liver, kidney; blood disorders maybe aggravated

Emergency and First Aid Procedures

For overexposure to vapor move to fresh air. For contact with skin and eyes flush with plenty of water for 15 minutes. Eyes get prompt medical attention. Do not ingest.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

Evacuate unnecessary personnel, contain spill, ventilate area mop up and collect liquid and place in a DOT approved container

Safe Disposal Method

Dispose of in accordance with all federal, state, and local regulation

Precautions to Be Taken in Handling and Storing

Store in a cool, dry well ventilated place. Keep container tightly closed

Keep from freezing

Other Precautions

None normally required

Section VIII — Control Measures

Respiratory Protection (Specify Type)

Use MSHA or NIOSH approved respirator for organic vapors if TLV is exceeded.

Exhaustion	Local Exhaust	Do not exceed TLV Values	Special
	Mechanical (General)		Other

Protective Gloves

Rubber Gloves

Eye Protection

Chemical Goggles

Other Protective Clothing or Equipment

None normally required

Sanitary Practices

Follow recommendation in section VII safe handling and use and wash skin and clothing after

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203
503-286-1677 • FAX: 289-2272

VENDOR: 00046900

ATTN ORDER DEPARTMENT
APOLLO CHEMICAL & EQUIPMENT
6647 NE 47TH AVE.
PORTLAND OR 97218

PURCHASE ORDER NO.

82510227

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date Issued	7/28/95
Date Required	8/11/95
Terms	NET 30 DAYS
Via	VENDORS TRUCK
Freight Terms	FOB: DESTINATION

This order is ☐ a confirmation ☒ not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	✓ 15	GAL	STEAM CLEANER SOAP, * M.S.D.S. REQUIRED * Supplier #: SC-575 ** ORIGINAL ORDER ** (Pay P/s # 44675 8/14/95)	APOLLO 05-10-900		00-00-0420-0008	97.50

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

one *Howard L. Matheson*

Jan. 24, 1995 11:14AM COE 15 EAST
** MATERIAL SAFETY DATA SHEET **
=====

CHEMTREC 24 Hour Emergency
Assistance Phone No.: 1-800-424-9300

No. 3441 P. 3/4
HARBISON-WALKER INDUSTRIES
DIVISION OF MENZIES INC.
ONE GATEWAY CENTER
PITTSBURGH, PA 15222

Latest Revision Date...08/09/93
Print Date.....01/24/95
Prepared By: S. W. Thrower (412-562-6437)

HA ANCHORS

=====

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT TRADENAME..... HA ANCHORS
TYPE OF REFRACTORY..... High Alumina Brick
H-W BRAND CODE..... 433011

HMIS RATING..... Health: 2 0 = Minimal
Flammability: 0 1 = Slight
Reactivity: 0 2 = Moderate
3 = Serious
4 = Severe

=====

SECTION 2 HAZARDOUS INGREDIENTS / HAZARD DATA

CHEMICAL NAME (CHEMICAL FORMULA)	CAS NUMBER	% WEIGHT	OSHA TWA	ACGIH TLV	SEC. 313
Cristobalite (SiO ₂)	14464-46-1	5-7	0.05 mg/cubic meter	0.05 mg/cubic meter	No
Alumina (Non-Fibrous) (Al ₂ O ₃)	1344-26-1	63-65	10 mg/cubic meter	10 mg/cubic meter	No

=====

SECTION 3 PHYSICAL DATA

PH..... Not determined
SPECIFIC GRAVITY OR BULK DENSITY 2.45
SOLUBILITY IN WATER..... Insoluble
APPEARANCE..... Buff color
ODOR..... No odor
FORM..... Brick

=====

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Unless otherwise noted, no fire hazard.
Product is a refractory and will not burn.

=====

SECTION 5 EFFECTS OF OVEREXPOSURE * ROUTE OF ENTRY

INGREDIENT	EFFECTS OF OVEREXPOSURE	SKIN	EYES	INHALATION
Crystalline Silica	Delayed lung fibrosis-silicosis	No	No	Yes
Crystalline Silica	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes
Alumina	Irritant to skin, eyes, mucous membranes	Yes	Yes	Yes

=====

SECTION 6 EMERGENCY AND FIRST AID PROCEDURES

Irritants: Wash from skin or flush from eyes using large amounts of water.

=====

SECTION 7 REACTIVITY DATA

PRODUCT STABILITY..... Stable
CHEMICAL INCOMPATIBILITY..... None
HAZARDOUS DECOMPOSITION PRODUCTS N/A
HAZARDOUS POLYMERIZATION..... Will not occur

Page 1

HA ANCHORS

From: MENZIES

SECTION 7REACTIVITY DATA

CONT'D

MATERIAL TO AVOID..... None

SECTION 8SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

SECTION 9SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION..... Where air contaminants can exceed acceptable criteria, use approved respiratory protection equipment appropriate to form and concentration of air contaminants.

VENTILATION..... Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits.

PROTECTIVE GLOVES..... Abrasion resistant

EYE PROTECTION..... Approved safety glasses, goggles, or faceshields should be used.

FOOT PROTECTION..... Metatarsal safety shoes

OTHER PRECAUTIONS..... None

SECTION 10SPECIAL PRECAUTIONS

This product contains crystalline silica for which there is limited evidence of a possible association with the incidence of cancer in humans.

SECTION 11SUPPLIER INFORMATION

This MSDS is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harrison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARRISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARRISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.



HARBISON-WALKER REFRACT From: MENZIES

Division of INDRESCO Inc.

One Gateway Center, Pittsburgh, PA 15222

DATE: 1-24-95

PHONE: 412-562-6513
FAX: 412-562-6489



FROM: Diane M. Menzies
Central Order Entry

TO: Ash Grove Cement Co.
Attn: Howard Matheson

4 TOTAL PAGES INCLUDING COVER SHEET

If you do not receive all pages, please call me at the above number.

-- HAVE A NICE DAY --

From: MENZIES



HARBISON-WALKER REFRACTORIES

Division of INDRESCO Inc.

One Gateway Center, Pittsburgh, PA 15222

January 24, 1995

Ash Grove Cement Co.

13939 N. Rivergate Blvd.

Portland, OR 97203

ATTN: Howard Matheson

In response to your request, enclosed please find the Material Safety Data Sheet(s) that you requested.

If you have any problems or questions, please feel free to contact me at (412) 562-6513 or Stephen Thrower at (412) 562-6437.

Sincerely,

HARBISON-WALKER REFRACTORIES

Diane M. Menzies /wkp

Diane M. Menzies

/dmm

Enclosure(s)



March 17, 1995

ASHGROVE CEMENT CO
13939 N RIVERGATE
PORTLAND, OR 972036608

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), WE ARE ENCLOSING A SAFETY DATA SHEET (MSDS) ON THE FOLLOWING:

PRODUCT CODE	PRODUCT DESCRIPTION
HO46	CHEVRON HYDRAULIC OIL AW 46
DLG2	CHEVRON DURALITH GR EP 2
ATFTF	CHEVRON ATF TYPE F

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM PRIESTLEY OIL AND CHEMICAL

SINCERELY YOURS,

Vincent J. McClain
ENVIRONMENTAL AND SAFETY COORDINATOR

PORTLAND
2429 North Borthwick Avenue, Portland, OR 97227-1776
P.O. Box 12570, Portland, OR 97212-0570
Telephone: (503) 288-5294

SEATTLE
(206) 223-1356

WATS: 1-800-422-5069 • FAX: (503) 288-0421

VANCOUVER
7208 N.E. St. Johns Road, Vancouver, WA
P.O. Box 530 Vancouver, WA 98666-0530
Telephone: (206) 694-2521 • (503) 239-1566

Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON Hydraulic Oil AW ISO 46

CPS255674

Page 1 of 7

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting

FRISTLEY OIL & CHEMICAL 3746534

MATERIAL ORDERED FOR:

CO., INC.

SHLR LUBE OIL PICK-UP WA

P O BOX 12570

FOR WILLINGBIDGE

PORTLAND, OR 97212

PORTLAND, OR 97210

Print Date: October 08, 1992

1. PRODUCT IDENTIFICATION

CHEVRON Hydraulic Oil AW ISO 46

PRODUCT NUMBER(S): CPS255674

PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614
NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4034, Richmond, CA 94804.

X-005051 106-89

2. FIRST AID MEASURES

EMERGENCY NUMBER (24 hr): (800)451-2022 or (510)233-3737 (International)

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This substance may be irritating if inhaled. Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing. This hazard evaluation is based on data from similar materials.

INGESTION:

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614
NDA - No Data Available NA - Not Applicable

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE FIGHTING MEASURES

SPECIAL NOTES: Leaks/ruptures in high pressure systems using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

FLASH POINT: (COC) >392°F (200°C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur and phosphorus. Incomplete combustion can produce carbon monoxide.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614
NDA - No Data Available NA - Not Applicable

NDA**STABILITY:**

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

7. PHYSICAL AND CHEMICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.**APPEARANCE:** Pale yellow liquid.**BOILING POINT:** NA**MELTING POINT:** NA**EVAPORATION:** NA**SPECIFIC GRAVITY:** 0.88 @ 15.6/15.6C**VAPOR PRESSURE:** NA**PERCENT VOLATILE (VOLUME %):** NA**VAPOR DENSITY (AIR=1):** NA**VISCOSITY:** 41.4 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616**SPILL/LEAK PRECAUTIONS:**

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

Revision Number: 1**Revision Date:** 06/04/92**MSDS Number:** 004614**NDA - No Data Available****NA - Not Applicable**

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CASE COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Hydraulic Oil AW ISO 46

CONTAINING

> 99.0 % LUBRICATING BASE OIL
5 mg/m3 mist ACGIH TWA
10 mg/m3 mist ACGIH STEL
5 mg/m3 mist OSHA TWA

The BASE OIL may be a mixture of any of the following: CAS 64741864, CAS 64741895, CAS 64741963, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

< 1.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:	1. Immediate (Acute) Health Effects:	NO
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	NO
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

Revision Number: 1	Revision Date: 06/06/92	MSDS Number: 004614
NDA - No Data Available	NA - Not Applicable	

X-003027 (01-89)

01-SARA 313	02-MASS RTK	03-NTP Carcinogen
04-CA Prop. 65	05-MI 406	06-IARC Group 1
07-IARC Group 2A	08-IARC Group 2B	09-SARA 302/304
10-PA RTK	11-NJ RTK	12-CERCLA 302.4
13-MN RTK	14-ACGIH TWA	15-ACGIH STEL
16-ACGIH Calculated TLV	17-OSHA TWA	18-OSHA STEL
19-Chevron TWA	20-EPA Carcinogen	21-TSCA Sect 4(e)
22-TSCA Sect 5(a)(e)(f)	23-TSCA Sect 6	24-TSCA Sect 12(b)
25-TSCA Sect 8(a)	26-TSCA Sect 8(d)	28-Canadian WHMIS
29-OSHA CEILING	30-Chevron STEL	

The following components of this material are found on the regulatory lists indicated.

LUBRICATING BASE OIL

is found on lists: 18,15,17,

11. TOXICOLOGICAL INFORMATION

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as: carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

Revision Number: 1

Revision Date: 06/04/92

MSDS Number: 004614

NDA - No Data Available

NA - Not Applicable

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614
NDA - No Data Available NA - Not Applicable

X-005021 (01-89)



Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON Dura-Lith Grease EP NLGI 2

PRODUCT NUMBER(S): CPS254595

COMPANY IDENTIFICATION

Chevron USA Products Company
Environmental, Safety, and Health
575 Market St., Room 2900
San Francisco, CA 94105-2856

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-1899
Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON Dura-Lith Grease EP NLGI 2

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
LUBRICATING BASE OIL			
SEVERELY REFINED PETROLEUM DISTILLATE			
	> 87.0%	5 mg/m3 (mist)	ACGIH TWA
		10 mg/m3 (mist)	ACGIH STEL
		5 mg/m3 (mist)	OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741864, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

THICKENER FOR GREASES

> 9.0%

Revision Number: 3 Revision Date: 10/21/93 MSDS Number: 004698
NDA - No Data Available NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard
(29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology
and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-DCS051 (06-88)

ADDITIVES

< 4.0%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION**POTENTIAL HEALTH EFFECTS****EYE:**

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

4. FIRST AID MEASURES**EYE:**

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Revision Number: 3

Revision Date: 10/21/93

MSDS Number: 004698

NDA - No Data Available

NA - Not Applicable

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

NOTE TO PHYSICIANS:

In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: 480F (249C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and zinc. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

ACCIDENTAL RELEASE MEASURES:

Clean up spills immediately.

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

Revision Number: 3

Revision Date: 10/21/93

MSDS Number: 004698

NDA - No Data Available

NA - Not Applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

ENGINEERING CONTROLS:

No special ventilation is necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Smooth amber grease.

pH: NDA

VAPOR PRESSURE: NA

VAPOR DENSITY

(AIR=1): NA

BOILING POINT: NA

FREEZING POINT: NDA

MELTING POINT: NA

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.90@ 15.6/15.6C

DENSITY: NDA

EVAPORATION RATE: NA

VISCOSITY: 12 cSt @ 100C (Min.)

PERCENT VOLATILE

(VOL): NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

Revision Number: 3

Revision Date: 10/21/93

MSDS Number: 004698

NDA - No Data Available

NA - Not Applicable

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present an environmental problem.

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for

Revision Number: 3

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MSDS Number: 004698

NDA - No Data Available

NA - Not Applicable

additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	NO
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	21=TSCA Sect 4(e)
02=MASS RTK	12=CERCLA 302.4	22=TSCA Sect 5(a)(2)
03=NTP Carcinogen	13=MN RTK	23=TSCA Sect 6
04=CA Prop 65-Carcin	14=ACGIH TWA	24=TSCA Sect 12(b)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	25=TSCA Sect 8(a)
06=IARC Group 1	16=ACGIH Calc TLV	26=TSCA Sect 8(d)
07=IARC Group 2A	17=OSHA PEL	27=TSCA Sect 4(a)
08=IARC Group 2B	18=DOT Marine Pollutant	28=Canadian WHMIS
09=SARA 302/304	19=Chevron TWA	29=OSHA CEILING
10=PA RTK	20=EPA Carcinogen	30=Chevron STEL

The following components of this material are found on the regulatory lists indicated.

SEVERELY REFINED PETROLEUM DISTILLATE
is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;
(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This Material Safety Data Sheet has been revised to comply with the ANSI Z400.1 Standard. Changes have also been made throughout this MSDS. Please read the entire document.

Revision Number: 3	Revision Date: 10/21/93	MSDS Number: 004698
NDA - No Data Available	NA - Not Applicable	

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 10/21/93 MSDS Number: 004698
NDA - No Data Available NA - Not Applicable

X-00S021 (01-89)

Emergency Number (800)457-2022 or (510)233-3737

Chevron

Material Safety Data Sheet

CHEVRON ATF Type F

CPS226588

Page 1 of 7

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting

PRIESTLEY OIL & CHEMICAL 3907475

MATERIAL ORDERED FOR:

CO., INC.

PACKAGE PICK-UP W.B.

P O BOX 12570

FOR WILLBRIDGE

PORTLAND, OR 97212

PORTLAND, OR 97210

Print Date: August 05, 1992

1. PRODUCT IDENTIFICATION

CHEVRON ATF Type F

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER
OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS226588

PRODUCT INFORMATION: (800)582-3835

Revision Number: 1

Revision Date: 10/15/91

MSDS Number: 004567

NDA - No Data Available

NA - Not Applicable

Prepared According to the OSHA Hazard Communication
Standard (29 CFR 1910.1200) by the Chevron Environmental
Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

X-005051 (06-89)

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 1**Revision Date: 10/15/91****MSDS Number: 004567****NDA - No Data Available****NA - Not Applicable**

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 175C (347F) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 1

Revision Date: 10/15/91

MSDS Number: 004567

NDA - No Data Available

NA - Not Applicable

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Red liquid.

BOILING POINT: NDA

MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.87 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 7.0 cSt @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m³, the OSHA PEL is 5 mg/m³.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 1

Revision Date: 10/15/91

MSDS Number: 004567

NDA - No Data Available

NA - Not Applicable

100.0 % CHEVRON ATF Type F

CONTAINING

> 90.0 % DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC
CAS64742525 5 mg/m3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC
CAS64742536 5mg/m3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
CAS64742547 5mg/3 mist ACGIH TLV
10mg/m3 mist ACGIH STEL
5mg/m3 mist OSHA TWA

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
CAS64742650

< 10.0 % ADDITIVES

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; NO
2. Delayed (Chronic) Health Effects; NO
3. Fire Hazard; NO
4. Sudden Release of Pressure Hazard; NO
5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC
is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC
is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
is found on lists: 14,15,17,

Revision Number: 1	Revision Date: 10/15/91	MSDS Number: 004567
NDA - No Data Available	NA - Not Applicable	

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06-IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

Revision Number: 1 Revision Date: 10/15/91 MSDS Number: 004567
NDA - No Data Available NA - Not Applicable



KAR PRODUCTS

**IMPORTANT - CONTAINS MATERIAL SAFETY DATA SHEETS (MSDS).
PLEASE ROUTE TO PROPER PERSON OR DEPARTMENT.**

We have enclosed Material Safety Data Sheets for products your company purchased from Kar Products. Our order number, invoice number and your purchase order number are shown below.

We are committed to helping you comply with the OSHA Hazard Communications Standard which requires that all personnel who may be exposed to hazardous materials must be provided by their employer with accurate information regarding the potential hazards of the materials they are using and trained in proper work practices to minimize any risk to your employees.

It is of critical importance that these MSDS sheets are forwarded to the person in your company responsible for implementing these regulations.

This packet was prepared by a computerized system which automatically prints and mails an MSDS when a product is first ordered by a customer or when there has been a change to the MSDS. Kar Products is committed to providing the service you need, and we ask that you contact your sales representative if you have questions or problems in this regard. If this is not convenient, please call Bobbie Cunnally at 1-708-296-6111 extension 6079.

ASH GROVE CEMENT WEST
13939 N RIVERGATE BLVD

PORTLAND, OR 97203

ORDER:
319784

INVOICE:
939051

CUST NO:
30255000

PROD. CODE

KAR PART #

DESCRIPTION:

79970
79970
79970

83488-00
83489-00
83490-00

ROLOC SURF.COND.DISC
ROLOC SURF.COND.DISC
ROLOC DISC PAD HLDR

PRODUCT CODE: 79970 - 79972 PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **SURFACE CONDITIONING DISCS(77960-77962) (83488-83493)****SECTION I - PRODUCT IDENTIFICATION****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111Date Entered: 02/15/92
Last Revision: 03/24/94
MSDS Printed: 02/22/95**SYNONYMS:****CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
Nylon Fibers	NA	NA			5.0 - 35.0
PHENOL-FORMALDEHYDE	9003-35-4	NA			0.0 - 33.0
POLY (METHYL METHACRYLATE)	9011-14-7	NA			0.0 - 33.0
Epoxy Resin	NA	NA			0.0 - 33.0
Abrasive particles	NA	10mg/m3(TWA)			10.0 - 65.0

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS**BOILING POINT:** NE or NA**SPECIFIC GRAVITY (WATER = 1):** ND**MELTING POINT:****VAPOR PRESSURE (MM HG):** . . . NA**VAPOR DENSITY (AIR=1):** . . . NA**PHYSICAL STATES:** ☐ Gas**EVAPORATION RATE:** NA☐ Liquid

(Butyl Acetate=1)

☒ Solid**SOLUBILITY IN WATER:** Insoluble**PH:** NA**PERCENT VOLATILE:** 0.0 % by weight.**APPEARANCE AND ODOR:**

Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders.

Viscosity: NA**SECTION IV - FIRE AND EXPLOSION HAZARD DATA****FLASH PT:** NE or NA**METHOD USED:** NA**EXPLOSIVE LIMITS:****LEL:** NA**UEL:** NA**EXTINGUISHING MEDIA:**

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

NA

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

SECTION V - REACTIVITY DATA**STABILITY:** Unstable ☐ Stable ☒**CONDITIONS TO AVOID - INSTABILITY:**

NA

INCOMPATIBILITY - MATERIALS TO AVOID:

NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

When subjected to flaming conditions, carbon dioxide, carbon monoxide, oxides of nitrogen and cyanides.

HAZARDOUS POLYMERIZATION: May occur ☐ Will not occur ☒**CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:**

NA

SECTION VI - HEALTH HAZARD DATA**ROUTE(S) OF ENTRY:** Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? No Other:**HEALTH HAZARDS (Acute and Chronic):**

Eye contact - Mechanical only; Skin contact - Mechanical only;

Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSHA-respirable fraction

10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP? IARC Monographs? OSHA Regulated?
RECOMMENDED EXPOSURE LIMITS: LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plenty of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

NA

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.

VENTILATION:

LOCAL EXHAUST: See "Respiratory Protection".

MECHANICAL (GENERAL):

SPECIAL:

OTHER:

EYE PROTECTION: See Section IX.

PROTECTIVE GLOVES:

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)****SECTION I - PRODUCT IDENTIFICATION****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111

Date Entered: 02/15/92

Last Revision: 03/24/94

MSDS Printed: 02/22/95

SYNONYMS:**CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
Nylon Fibers	NA	NA			5.0 - 35.0
PHENOL-FORMALDEHYDE	9003-35-4	NA			0.0 - 33.0
POLY (METHYL METHACRYLATE)	9011-14-7	NA			0.0 - 33.0
Epoxy Resin	NA	NA			0.0 - 33.0
Abrasive particles	NA	10mg/m3(TWA)			10.0 - 65.0

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS**BOILING POINT:** NE or NA**MELTING POINT:****PHYSICAL STATES:** [] Gas
[] Liquid
[X] Solid**SPECIFIC GRAVITY (WATER = 1):** ND
VAPOR PRESSURE (MM HG): . . . NA
VAPOR DENSITY (AIR=1): . . . NA
EVAPORATION RATE: NA
(Butyl Acetate=1)
SOLUBILITY IN WATER: Insoluble**PH:** NA**PERCENT VOLATILE:** 0.0 % by weight.**APPEARANCE AND ODOR:**

Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders.

Viscosity: NA**SECTION IV - FIRE AND EXPLOSION HAZARD DATA****FLASH PT:** NE or NA**METHOD USED:** NA**EXPLOSIVE LIMITS:****LEL:** NA**UEL:** NA**EXTINGUISHING MEDIA:**

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

NA

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

SECTION V - REACTIVITY DATA**STABILITY:** Unstable [] Stable [X]**CONDITIONS TO AVOID - INSTABILITY:**

NA

INCOMPATIBILITY - MATERIALS TO AVOID:

NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

When subjected to flaming conditions, carbon dioxide, carbon monoxide, oxides of nitrogen and cyanides.

HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]**CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:**

NA

SECTION VI - HEALTH HAZARD DATA**ROUTE(S) OF ENTRY:** Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? No Other:**HEALTH HAZARDS (Acute and Chronic):**

Eye contact - Mechanical only; Skin contact - Mechanical only;

Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSHA-respirable fraction

10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP? IARC Monographs? OSHA Regulated?
RECOMMENDED EXPOSURE LIMITS: LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plenty of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

NA

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.VENTILATION:LOCAL EXHAUST: See "Respiratory Protection".SPECIAL:MECHANICAL (GENERAL):OTHER:PROTECTIVE GLOVES:EYE PROTECTION: See Section IX.OTHER PROTECTIVE CLOTHING OR EQUIPMENT:WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

PRODUCT CODE: 79970 - 79972 PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962) (83488-83493)

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): **SURFACE CONDITIONING DISCS(77960-77962) (83488-83493)****SECTION I - PRODUCT IDENTIFICATION****MANUFACTURERS NAME AND ADDRESS:**KAR PRODUCTS
461 N. Third Avenue
Des Plaines, IL. 60016**TELEPHONE NUMBERS:**Rush Poison Control (800)752-7869
Emergency: () -
Information: (708)296-6111Date Entered: 02/15/92
Last Revision: 03/24/94
MSDS Printed: 02/22/95**SYNONYMS:****CHEMICAL FAMILY:****HAZARD LABEL:****MOLECULAR FORMULA:****MOLECULAR WEIGHT:** NE or NA**SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME)	CAS #	OSHA PEL	ACGIH TLV	OTHER LIMITS	PERCENTAGE
Nylon Fibers	NA	NA			5.0 - 35.0
PHENOL-FORMALDEHYDE	9003-35-4	NA			0.0 - 33.0
POLY (METHYL METHACRYLATE)	9011-14-7	NA			0.0 - 33.0
Epoxy Resin	NA	NA			0.0 - 33.0
Abrasive particles	NA	10mg/m3(TWA)			10.0 - 65.0

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS**BOILING POINT:** NE or NA**SPECIFIC GRAVITY (WATER = 1):** ND**MELTING POINT:****VAPOR PRESSURE (MM HG):** . . . NA**VAPOR DENSITY (AIR=1):** . . . NA**PHYSICAL STATES:** [] Gas**EVAPORATION RATE:** NA

[] Liquid

(Butyl Acetate=1)

[X] Solid

SOLUBILITY IN WATER: Insoluble**PH:** NA**PERCENT VOLATILE:** 0.0 % by weight.**APPEARANCE AND ODOR:**

Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders.

Viscosity: NA**SECTION IV - FIRE AND EXPLOSION HAZARD DATA****FLASH PT:** NE or NA**METHOD USED:** NA**EXPLOSIVE LIMITS:****LEL:** NA**UEL:** NA**EXTINGUISHING MEDIA:**

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

NA

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

SECTION V - REACTIVITY DATA**STABILITY:** Unstable [] Stable [X]**CONDITIONS TO AVOID - INSTABILITY:**

NA

INCOMPATIBILITY - MATERIALS TO AVOID:

NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

When subjected to flaming conditions, carbon dioxide, carbon monoxide, oxides of nitrogen and cyanides.

HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]**CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:**

NA

SECTION VI - HEALTH HAZARD DATA**ROUTE(S) OF ENTRY:** Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? No Other:**HEALTH HAZARDS (Acute and Chronic):**

Eye contact - Mechanical only; Skin contact - Mechanical only;

Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSHA-respirable fraction

10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP? IARC Monographs? OSHA Regulated?
RECOMMENDED EXPOSURE LIMITS: LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plenty of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

NA

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.VENTILATION:LOCAL EXHAUST: See "Respiratory Protection".MECHANICAL (GENERAL):SPECIAL:OTHER:EYE PROTECTION: See Section IX.PROTECTIVE GLOVES:OTHER PROTECTIVE CLOTHING OR EQUIPMENT:WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

9661 8 7 034

**Thermal Ceramics****MATERIAL SAFETY DATA SHEET****MSDS No:** 151-2 **Date Prepared:** 03/28/1995 **Revised/Reviewed:** 06/01/1998**1. PRODUCT AND COMPANY IDENTIFICATION**

Material Name: Crystalline Silica Containing Product
Common Name: Insulating Firebrick and Firebrick
Intended Use: High Temperature Thermal Insulation
Trade Names: K-25HS, K-25XHS, K-26S, K-26SE, K-26HS, K-26LI, K-28, K-28S, K-30, K-30S, K-3000, K-3000S; Firebrick 80, 80D, 80DZ; IFB Dust

Manufacturer/Supplier: THERMAL CERAMICS INC.
P.O. BOX 923; DEPT. 300
AUGUSTA, GA 30903-0923
Product Stewardship Program: 800-722-5681 / FAX: 706-560-4053
For additional MSDS's, call our automated FAXBACK: 800-329-7444

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT CAS NUMBER</u>	<u>PERCENT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Crystalline silica - quartz 14808-60-7	Up to 0.3	0.1 mg/m ³ (respirable)	0.1 mg/m ³ (respirable)
Crystalline silica - cristobalite 14464-46-1	0.5 - 21	0.05 mg/m ³ (respirable)	0.05 mg/m ³ (respirable)
Ferric oxide 1309-37-1	0.3 - 1.5	10 mg/m ³	5 mg/m ³
Titanium dioxide 13463-67-7	1.0 - 2.0	15 mg/m ³	10 mg/m ³
Calcium oxide 1305-78-8	0.1 - 1.0	5 mg/m ³	2 mg/m ³
Alumina 1344-28-1	40 - 70	15 mg/m ³ (total); 5 mg/m ³ (respirable)	10 mg/m ³
Silica, amorphous 7631-86-9	35 - 60	(80 mg/m ³ • % SiO ₂ **) or 20 mppcf	10 mg/m ³

NOTES:** % SiO₂ = percent of crystalline silica

(See Section 8 for Personal Protection Guidelines.)

3. HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW****** WARNING ****

- Cancer hazard by inhalation. [SEE BELOW]
- Dust from this product may aggravate existing chronic lung conditions such as bronchitis, emphysema and asthma.

MATERIAL SAFETY DATA SHEET

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Possible Health Effects

Target Organs: Eyes, skin, and respiratory system.
 Primary Entry Route: Inhalation
 Acute effects: Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to the skin on prolonged contact.
 Chronic effects: Prolonged/repeated inhalation of respirable crystalline silica may cause delayed lung injury (silicosis). [See Section 11 of this MSDS for more information.]

Hazard Classification:

The Seventh Annual Report on Carcinogens (1994), prepared by the National Toxicology Program (NTP), classified silica, crystalline (respirable size), as a substance which may reasonably be anticipated to be a carcinogen.

The International Agency for Research on Cancer (IARC) has classified crystalline silica inhaled in the form of quartz or cristobalite from occupational sources as carcinogenic to humans (Group 1). This IARC Classification was based on a relatively large number of epidemiological studies that together provide sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica.

The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "silica, crystalline (airborne particles of respirable size)" as a material known to the State of California to cause cancer.

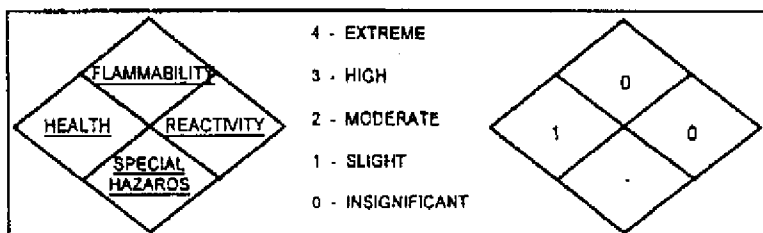
Signs and Symptoms of Overexposure:

Eye Contact: Physical irritation, laceration.
 Skin Contact: Physical irritation.
 Ingestion: May cause temporary irritation to the gastrointestinal tract.
 Inhalation: Decline in pulmonary function and abnormal chest x-ray.

4. FIRST AID MEASURES

Eye Contact: Flush with large amounts of water for at least 15 minutes. Do not rub eyes.
 Skin Contact: Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.
 Ingestion: Do not induce vomiting; drink plenty of water.
 Inhalation: Remove affected person to clean fresh air.
 ** If any of the symptoms persist, seek medical attention immediately.

5. FIRE FIGHTING INFORMATION



NFPA Unusual Hazards: None
 Flash Point: Non-combustible
 Extinguishing Media: Use extinguishing media appropriate to the surrounding fire.
 Explosion Hazards: None
 Protective Equipment: Wear NIOSH approved respirator together with other protective gear appropriate to the surrounding fire.

MATERIAL SAFETY DATA SHEET

MSDS No: 151-2

Date Prepared: 03/28/1995

Revised/Reviewed: 06/01/1998

6. ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures:

Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

7. HANDLING AND STORAGE

Handling:

Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

Storage:

This product is stable under all conditions of storage. Store in original factory container in a dry area. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use engineering controls such as ventilation and dust collection devices to reduce airborne particulate concentrations to the lowest attainable level.

Respiratory Protection:

When it is not possible or feasible to reduce airborne crystalline silica or particulate levels below the PEL through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne crystalline silica and/or dust concentrations using appropriate NIOSH analytical methods and select the respiratory protection based upon the results of that monitoring. 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH certified respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

Recommended Respiratory Protection When Handling Crystalline Silica Products

• AS PRODUCED AND AFTER SERVICE

CONCENTRATION

RESPIRATOR

Up to PEL	Disposable particulate respirator (N, R, or P, 95 rated) or half mask air purifying respirator with high efficiency (P100) filter cartridges.
> 1 to 10 times PEL	Half-mask, air-purifying respirator with high efficiency particulate air (HEPA) or P100 rated filter cartridges.
> 10 to 50 times PEL	Full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges or powered air-purifying respirator (PAPR) with HEPA or P100 rated filter cartridges.
> 50 times PEL	Full facepiece positive pressure supplied air respirator.

NOTE: For unknown exposures or when working with other contaminants, consult an industrial hygienist for air monitoring and respirator selection.

MATERIAL SAFETY DATA SHEET

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Protective Clothing: Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Eye Protection: Goggles/safety glasses with sideshields should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid brick or block	Vapor Density:	Not applicable
Chemical Family:	Aluminosilicates	Specific Gravity Range:	0.77 - 2.4
Vapor Pressure:	Not applicable	Volatile by Volume (%):	Not applicable
Boiling Point:	Not applicable	pH:	Not applicable
Melting Point:	3190°F to 3350°F		
Water Solubility (%):	Not soluble in water		

10. STABILITY AND REACTIVITY

Hazardous Polymerization: Will not occur

Chemical Incompatibilities: Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide

Hazardous Decomposition Products: None

11. TOXICOLOGICAL INFORMATION

Epidemiology: - Crystalline silica
Results of several epidemiology studies have indicated that diseases which may be caused by the uncontrolled inhalation of crystalline silica include silicosis, pulmonary tuberculosis or industrial bronchitis. In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystalline silica from occupational sources inhaled in the form of quartz or cristobalite is carcinogenic to humans (Group 1) [IARC Monograph; Vol. 68; June 1997]. However, in reaching its conclusion, IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g., cigarette smoking) or distribution of its polymorphs.

Toxicology: - Crystalline silica
There is sufficient evidence of carcinogenicity of respirable silica in experimental animals (IARC Monograph; Vol. 42; 1987 and IARC Monograph; Vol. 68; 1997). Inhalation and intratracheal installation of crystalline silica in rats caused lung cancer; however, studies in other species such as mice and hamsters caused no lung cancer. Crystalline silica also caused fibrosis in rats and hamsters in several inhalation and intratracheal installation studies.

12. ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

13. DISPOSAL INFORMATION

Waste Management: To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

MATERIAL SAFETY DATA SHEET

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

14. TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard Class: Not regulated
Labels: Not applicable
Placards: Not applicable
Bill of Lading: Product name

United Nations (UN) Number: Not applicable
North America (NA) Number: Not applicable

15. REGULATORY INFORMATION

United States Regulations

SARA Title III: This product does not contain any substances reportable under Sections 302, 304, 313 (40 CFR 372). Sections 311 and 312 apply.

OSHA: Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication Standard.

TSCA: All substances contained in this product are listed in the TSCA Chemical Inventory [Section 8(b)].

California: Listed as "Silica, crystalline (airborne particles of respirable size)" Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986. Known to the State of California to cause cancer.

Other States: Crystalline silica products are not known to be regulated by states other than California; however, state and local OSHA and EPA regulations may apply to these products. Contact your local agency if in doubt.

International Regulations

Canadian WHMIS: Class D-2A Materials Causing Other Toxic Effects
Canadian EPA: All substances in this product are listed, as required, on the Domestic Substance List (DSL).

16. OTHER INFORMATION

Precautionary Measures to be Taken After Service and Upon Removal:

Amorphous silica may transform to crystalline silica when subjected to temperatures exceeding 1800° F. Therefore, the content of crystalline silica may be higher than originally stated in Section 2. Users should observe good industrial hygiene and work practices to reduce employees' exposure when handling after service products.

HMIS Hazard Rating:

HMIS Acute Health: 1*
HMIS Flammable: 0
HMIS Reactivity: 0

HMIS Personal Protective: To be supplied by user depending upon use

*See Section 3 of the MSDS for possible chronic health effects.

SARA Title III Hazard Categories:

Acute Health: Yes
Chronic Health: Yes
Fire Hazard: No

Pressure Hazard: No
Reactivity Hazard: No

MATERIAL SAFETY DATA SHEET

MSDS No: 151-2	Date Prepared: 03/28/1995	Revised/Reviewed: 06/01/1998
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Definitions:

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS:	Chemical Abstracts Service Registry Number
EPA:	Environmental Protection Agency
f/cc:	Fibers per cubic centimeter
HEPA:	High Efficiency Particulate Air
HMIS:	Hazardous Materials Identification System
mg/m3 :	Milligrams per cubic meter of air
mppcf:	Million particles per cubic meter
MSHA:	Mine Safety and Health Administration
NFPA:	National Fire Protection Association
NIOSH:	National Institute for Occupational Safety and Health
OSHA:	Occupational Safety and Health Administration
RCRA:	Resource Conservation and Recovery Act
SARA:	Superfund Amendments and Reauthorization Act
Title III:	Emergency Planning and Community Right to Know Act
...Section 302:	Extremely Hazardous Substances
...Section 304:	Emergency Release
...Section 311:	MSDS/List of Chemicals
...Section 312:	Emergency and Hazardous Inventory
...Section 313:	Toxic Chemicals Release Reporting
STEL:	Short-Term Exposure Limit
TCLP:	Toxicity Characteristics Leaching Procedures (EPA)
TLV:	Threshold Limit Values (ACGIH)
TSCA:	Toxic Substance Control Act
WHMIS:	Workplace Hazardous Materials Information System (Canada)
29 CFR 1910.134 & 1926.103:	OSHA Respiratory Protection Standard
29 CFR 1910.1200 & 1926.59:	OSHA Hazard Communications Standard

Revisions: Replaces revision 03/23/98. Revised Respiratory Protection in Section 8 with updated information.

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.

MATERIAL SAFETY DATA SHEET

MSDS No: 151-2

Date Prepared: 03/28/1995

Revised/Reviewed: 06/01/1998

PRODUCT SAFETY INFORMATION

CRYSTALLINE SILICA CONTAINING PRODUCT (Quartz CAS #14808-60-7 And/Or Cristobalite CAS #14464-46-1)

WARNING:

- This product contains crystalline silica, which has been identified by the International Agency for Research on Cancer (IARC) as a known carcinogen to humans.

Avoid breathing particulates and dust

RISKS:

- Cancer hazard by inhalation.
- May cause silicosis (lung disease) by inhalation.
- May cause temporary irritation to eyes, skin and respiratory tract.

PRECAUTIONARY MEASURES:

- Minimize airborne particulates and dust with engineering controls.
- Wear a NIOSH certified respirator.
- Wear long sleeved, loose-fitting clothing, eye protection, and gloves.
- Wash work clothing separately and rinse washing machine after use.

FIRST AID MEASURES:

- Eyes:** Flush with Water.
Skin: Wash with soap and warm water.
Ingestion: Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.
Inhalation: Remove to fresh clean air.

If any of the above irritations persists, seek medical attention immediately.

FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES, REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS).

THERMAL CERAMICS INC.
P.O. BOX 923 DEPT. 300
AUGUSTA, GA 30903-0923
(800) 722-5681



Canadian WHMIS Class D-2A: Material causing other toxic effects.

Label No: 2-0895 (Rev. 04/98)



4004

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT NAME

Material Name: Crystalline Silica Containing Product
Common Name: Insulating Firebrick and Firebrick
Intended Use: High temperature thermal insulation
Trade Names: K-25HS, K-25XHS, K-26S, K-26SE, K-26HS, K-26LI, K-28, K-28S, K-30, K-30S, K-3000, K-3000S, 80FB, 80D FB

Manufacturer/Supplier

THERMAL CERAMICS INC.
P. O. BOX 923 DEPT. 300
AUGUSTA, GA 30903
Product Stewardship Program 800-722-5681 FAX 706-560-4053

SECTION 2 - COMPOSITION AND INGREDIENTS

INGREDIENT NAME	CAS NUMBER	PERCENT	OSHA PEL
Silica, crystalline**			
- quartz	14808-60-7	Up to 0.3	0.1 mg/m ³ (respirable dust)
- cristobalite	14464-46-1	0.5 - 21	0.05 mg/m ³ (respirable dust)
Ferric Oxide	1309-37-1	0.3 - 1.5	10 mg/m ³
Titanium Oxide	13463-67-7	1.0 - 2.0	10 mg/m ³
Calcium Oxide	1305-78-8	0.1 - 1.0	5 mg/m ³
Alumina	1344-28-1	40 - 70	15 mg/m ³ (total dust) 5 mg/m ³ (respirable dust)
Silica, Amorphous	7631-86-9	35 - 60	6 mg/m ³

** Crystalline silica may be present in after service material exposed to temperatures above 1800°F for a long period of time.

(NOTE: See Section 8 of this MSDS for Personal Protection Guidelines)

SECTION 3 - HAZARDS IDENTIFICATION

Possible

health effects:

Dust from this product may aggravate existing chronic lung conditions such as bronchitis, emphysema and asthma.

Target organs: Eyes, skin, and respiratory system

Primary entry route: Inhalation

Acute effects: Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to the skin on prolonged contact.

Chronic effects: Prolonged/repeated inhalation of respirable free crystalline silica dust may cause delayed lung injury (silicosis). IARC has placed crystalline silica in category 2A (IARC believes there is sufficient evidence of carcinogenicity in animals but evidence of the carcinogenicity to humans is limited).

Signs and symptoms of overexposure:

Eye contact: Physical irritation, laceration

Skin contact: Physical irritation

Ingestion: May cause temporary irritation to the gastrointestinal tract

Inhalation: Decline in pulmonary function and abnormal chest x-ray

MATERIAL SAFETY DATA SHEET

SECTION 4 - FIRST AID

Eye contact: Flush with large amounts of water for at least 15 minutes. Do not rub eyes.
Skin contact: Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.
Ingestion: Do not induce vomiting; drink plenty of water.
Inhalation: Remove affected person to clean fresh air.
****If any of the symptoms persist, seek medical attention immediately****

SECTION 5 - FIRE FIGHTING MEASURES

Flash point: Non-combustible
Extinguishing media: Use extinguishing media appropriate to the surrounding fire.
Explosion hazards: None
Fire fighting protective equipment: Wear full bunker gear including positive pressure self-contained breathing apparatus.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spill/leak procedures: Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

SECTION 7 - HANDLING AND STORAGE

Handling: Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.
Storage: This product is stable under all conditions of storage. Store in original factory container in a dry area. Keep container closed when not in use.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: Use engineering controls such as ventilation and dust collection devices to reduce airborne particulate concentrations to the lowest attainable level.
Protective clothing: Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.
Eye protection: Goggles/safety glasses with sideshields should be worn.
Respiratory protection: When it is not possible or feasible to reduce airborne crystalline silica or particulate levels below the PEL through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne crystalline silica and dust concentrations using appropriate NIOSH analytical methods and select the respiratory protection based upon the results of that monitoring, 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH/MSHA approved respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment.



MATERIAL SAFETY DATA SHEET

Minimum Acceptable Respiratory Protection
When Handling Crystalline Silica Containing Product

AS PRODUCED AND AFTER SERVICE

CONCENTRATION

RESPIRATOR

Up to PEL	RECOMMENDED: Disposable dust/mist respirator (e.g. 3M 9900)
Up to 10 times PEL	Disposable dust/mist respirator (e.g. 3M 9900) or half-face, air-purifying respirator equipped with high efficiency particulate air (HEPA) filter cartridges (e.g. 3M 6000 Series)
Up to 50 times PEL	Full-face air-purifying respirator equipped with high-efficiency particulate air (HEPA) filter cartridges (e.g. 3M 7800 with 7255 filters) or powered air-purifying respirator (PARR) equipped with HEPA filter cartridges (e.g. 3M W3265S with W3267 filters)
Greater than 50 times PEL	Full-face positive pressure supplied air respirator (e.g. 3M) 7800 with W9435 hose and W3196 regulator)

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

<i>Appearance:</i>	Solid brick or block	<i>Vapor pressure:</i>	Not applicable
<i>Boiling point:</i>	Not applicable	<i>Vapor density:</i>	Not applicable
<i>Melting point:</i>	3190°F to 3350°F	<i>Specific gravity range:</i>	0.77 - 2.4
<i>Water solubility (%):</i>	Not soluble in water	<i>% Volatile by volume:</i>	Not applicable
<i>Chemical family:</i>	Aluminosilicates	<i>pH:</i>	Not applicable

SECTION 10 - STABILITY AND REACTIVITY

<i>Hazardous polymerization:</i>	Will not occur.
<i>Chemical incompatibilities:</i>	Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide
<i>Hazardous decomposition products:</i>	None

MATERIAL SAFETY DATA SHEET

SECTION 11 - TOXICOLOGICAL INFORMATION

Epidemiology:

An IARC Working Group reported that there is limited evidence for the carcinogenicity of crystalline silica in humans (IARC S.7, 1987; IARC V.42, 1987). A number of studies have investigated the occurrence of lung cancer in persons diagnosed as having silicosis after occupational exposure to dust containing respirable crystalline silica. Of three case-control studies, two showed an association between silicosis and lung cancer. Seven cohort studies and one proportionate mortality study all demonstrated that lung cancer occurs more frequently in silicotics than in the general population.

This increase has been seen among miners, quarry workers, foundry workers, ceramic workers, granite workers, and stone cutters. In some of these studies, the risk of lung cancer increased with duration employment. Only rarely, however, were data obtained on smoking and on potential confounding exposures and the comparability of the referent population assured (IARC V.42, 1987; IARC S.7, 1987).

Toxicology:

There is sufficient evidence for the carcinogenicity of respirable crystalline silica in experimental animals (IARC V.42, 1987; IARC S.7, 1987). When administered by inhalation, quartz (CAS #14808-60-7) induced significant increases in the incidence of adenocarcinomas and squamous cell carcinomas of the lungs in rats of both sexes in one study and female rats (nose only inhalation) in another study. In three studies in which quartz was administered by single or repeated intratracheal instillation, there was a significant increase in the incidence of adenocarcinomas and squamous cell carcinomas in rats.

Different specimens of quartz, with particles in the respirable range, were tested in the inhalation and intratracheal instillation studies. No pulmonary tumor was observed in hamsters in four experiments using repeated intratracheal instillation of quartz dusts. When administered as a single interpleural or intraperitoneal injection, suspensions of several types of quartz induced thoracic and abdominal malignant lymphomas, primarily of the histiocytic type, in rats of both sexes.

When administered as a single intrapleural injection, cristobalite (CAS #14464-46-1) or tridymite (CAS #15468-32-3), with particles in the respirable range, induced malignant lymphomas, primarily of the histiocytic type, in rats of both sexes. When administered as a single intravenous injection, one sample of quartz failed to induce a significant difference in the presence or multiplicity of pulmonary adenomas in strain A mice of both sexes.

SECTION 12 - ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

SECTION 13 - DISPOSAL INFORMATION

Waste management/ disposal:

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

MATERIAL SAFETY DATA SHEET

SECTION 14 - TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard class: Not regulated
Labels: Not applicable
Placards: Not applicable
Bill of lading: Product name

United Nations (UN) Number: Not applicable
North America (NA) Number: Not applicable

SECTION 15 - REGULATORY INFORMATION

SARA Title III: This product does not contain any substances reportable under Sections 302, 304, 313 (40 CFR 372). Sections 311 and 312 apply.

OSHA: Comply with Hazard Communication Standard 29 CFR 1910.1200 and 29 CFR 1926.59, Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication Standard.

TSCA: All substances contained in this product are listed in the TSCA Chemical Inventory [Section 8(b)].

California: Listed as "Silica, Crystalline (airborne particles of respirable size)" Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986.

SECTION 16 - OTHER INFORMATION

Precautions To Be Taken After Service and Upon Removal:

Removal of this product after service may generate respirable dust. Prolonged/repeated inhalation of respirable free crystalline silica dust may cause delayed lung injury (silicosis). IARC has placed crystalline silica in Category 2A, a probable carcinogen (IARC believes there is sufficient evidence of carcinogenicity in animals but evidence of the carcinogenicity to humans is limited). The OSHA PEL for respirable cristobalite is 0.05 mg/m³. Appropriate ventilation and respiratory protection should be provided in compliance with OSHA Standards.

HMIS and NFPA Hazard Rating:

Category	HMIS	NFPA
Acute Health	1*	1
Flammability	0	0
Reactivity	0	0
NFPA Unusual Hazards:	None	
HMIS Personal Protection:	To be supplied by user depending upon use.	

*See detail information on MSDS for possible chronic health effects.

SARA Title III Hazard Categories:

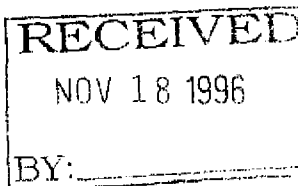
Acute Health:	Yes	Pressure Hazard:	No
Chronic Health:	Yes	Reactivity Hazard:	No
Fire Hazard:	No		



MATERIAL SAFETY DATA SHEET

Definitions:

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS:	Chemical Abstracts Service Registry Number
EPA:	Environmental Protection Agency
f/cc:	Fibers per cubic centimeter
HEPA:	High Efficiency Particulate Air
HMIS:	Hazardous Materials Identification System
mg/m ³ :	Milligrams per cubic meter of air
MSHA:	Mine Safety and Health Administration
NFPA:	National Fire Protection Association
NIOSH:	National Institute for Occupational Safety and Health
OSHA:	Occupational Safety and Health Administration
RCRA:	Resource Conservation & Recovery Act
SARA:	Superfund Amendments and Reauthorization Act
TITLE III:	Emergency Planning and Community Right To Know Act
Section 302:	Extremely Hazardous Substances
Section 304:	Emergency Release
Section 311:	MSDS/List of Chemicals
Section 312:	Emergency and Hazardous Inventory
Section 313:	Toxic Chemicals Release Reporting
STEL:	Short-Term Exposure Limit
TCLP:	Toxicity Characteristics Leaching Procedures (EPA)
TLV:	Threshold Limit Values (ACGIH)
TSCA:	Toxic Substance Control Act
29 CFR 1910.134 and 29 CFR 1926.103:	OSHA Respiratory Protection Standard
29 CFR 1910.1200 and 29 CFR 1926.59:	OSHA Hazard Communications Standard



PRODUCT SAFETY INFORMATION	RENSEIGNEMENTS SUR LA SÉCURITÉ DES PRODUITS	INFORMACION SOBRE SEGURIDAD DE PRODUCTO
Crystalline Silica Containing Product (Quartz CAS #14808-60-7 And/Or Cristobalite CAS #14464-46-1)	Contenant De La Silice Cristalline (Quartz CAS #14808-60-7 ET/OU Cristobalite CAS #14464-46-1)	Producto Contiene Silice Cristalina (Quartz CAS #14808-60-7 Y/O Cristobalite CAS #14464-46-1)
WARNING: This product contains a substance which has been identified by the International Agency for Research on Cancer (IARC) as a probable carcinogen to humans. <i>Avoid breathing particulates and dust.</i>	ATTENTION: Ce produit contient une substance identifiée par le Centre International de Recherche sur le Cancer (IARC) comme un probable carcinogène aux humains. <i>Évitez de respirer les particules et la poussière.</i>	AVISO: Este producto contiene una sustancia que ha sido identificada por la Agencia Internacional para la Investigación del Cáncer (IARC) como un probable cancerígeno a los seres humanos. <i>Evite respirar partículas y polvo.</i>
RISKS: • Probable cancer hazard by inhalation. • May cause silicosis (lung disease) by inhalation. • May cause temporary irritation to eyes, skin and respiratory tract.	RISQUES: • Risque probable de cancer par inhalation. • L'inhalation peut causer la silicose (maladie de poumon). • Peut causer une irritation temporaire des yeux, de la peau et des voies respiratoires.	RIESGOS: • Probable peligro de cáncer por inhalación. • Puede causar silicosis (enfermedad de los pulmones) por inhalación. • Puede causar irritación temporal de los ojos, piel y vía respiratoria.
PRECAUTIONARY MEASURES: • Minimize airborne particulates and dust with engineering controls. • Wear a NIOSH/MSHA approved respirator. • Wear long sleeved loose-fitting clothing, eye protection and gloves. • Wash work clothing separately and rinse washing machine after use.	MEURES PRÉVENTIVES: • Minimisez les particules et la poussière en suspension dans l'air par des techniques d'ingénierie. • Portez un respirateur approuvé par NIOSH/MSHA. • Portez des vêtements amples à manches longues, une protection oculaire et des gants. • Lavez les vêtements de travail séparément et rincez l'appareil laveuse après chaque utilisation.	MEDIDAS DE PRECAUCION: • Minimizar las partículas y polvo en el aire con controles de ingeniería. • Use un respirador aprobado por NIOSH/MSHA. • Use ropa holgada con mangas largas, protección para los ojos y guantes. • Lave la ropa de trabajo separada y enjuague la máquina lavadora después de usarla.
FIRST AID MEASURES: Eyes: Flush with water. Skin: Wash with soap and warm water. Ingestion: Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop. Inhalation: Remove to fresh clean air. <i>If any of the above irritations persist seek medical attention immediately.</i>	PREMIERS SOINS: Yeux: Rincez abondamment avec de l'eau. Peau: Lavez avec du savon et de l'eau tiède. Ingestion: Ne pas faire vomir. Consultez un médecin si des symptômes gastro-intestinaux se révèlent. L'inhalation: dirigez la personne où l'air est propre et frais. <i>Si quelque chose des irritations mentionnées précédemment persistent, consultez un médecin immédiatement.</i>	MEDIDAS DE PRIMEROS AUXILIOS: Ojos: enjuague con agua limpia. Piel: lave con jabón y agua templada. Ingestión: no induzca el vómito. Busque atención médica si desarrolla síntomas gastrointestinales. Inhalación: retire a la persona a un área fresca y limpia. <i>Si persisten cualquiera de las irritaciones mencionadas, busque atención médica inmediatamente.</i>
FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES REFER TO THE MATERIAL SAFETY DATA SHEET (MSDS) THERMAL CERAMICS P.O. BOX 923 MS 300 Augusta, GA 30903 USA (800) 722-5681	POUR RENSEIGNEMENTS SUPPLÉMENTAIRES SUR LE PRODUIT ET PRATIQUES DE TRAVAIL VOIR LA FICHE SIGNALÉTIQUE (FS) THERMAL CERAMICS P.O. Box 923 MS 300 Augusta, GA 30903 USA (706) 796-4200	PARA MAYOR INFORMACION SOBRE LOS PRODUCTOS Y NORMAS DE TRABAJO CONSULTE LA HOJA DE DATOS DE SEGURIDAD DE MATERIALES THERMAL CERAMICS P.O. Box 923 MS 300 Augusta, GA 30903 USA (706) 796-4200

Revisions: Replaces Revision dated June 6, 1995. New three language label.
Label: 2-0895.

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.



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REPORT NUMBER: 703
1SDS NO: 0X622680
EFFECTIVE DATE: 04/21/95

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

PAGE: 001
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PRODUCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776
PROD NO : 503030

ASH GROVE CEMENT
13939 N. RIVERGATE BLVD
P O BOX 03007

PORTLAND ,OR 97203

VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

----- EMERGENCY ASSISTANCE -----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL -- CHEMTREC
(800)424-9300

PRODUCT NAME:
SODIUM HYPOCHLORITE 7-15%

1SDS #: 0X622680

I. PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM HYPOCHLORITE 7-15%
SYNONYMS: Liquid chlorine, liquid bleach, Pure Chlor, Sunny Sol 150
CHEMICAL FAMILY: Hypochlorite
FORMULA: NaOCl in water
DESCRIPTION: Swimming pool chlorinator, Microbiocide
OSHA HAZARD CLASSIFICATION: Oxidizer, unstable (reactive), corrosive
to skin and eyes, lung toxin

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Sodium hypochlorite
CAS NUMBER: 7681-52-9
PERCENTAGE RANGE: 7-15
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established
CAS or CHEMICAL NAME: Water
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 73-87

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HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established
CAS or CHEMICAL NAME: Sodium hydroxide
CAS NUMBER: 1310-73-2
PERCENTAGE RANGE: 0.5-2.5
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

OSHA(PEL)

ppm mg/cubic-meter

TWA: None Established
CEILING: 2
STEL: None Established
CAS or CHEMICAL NAME: Sodium chloride
CAS NUMBER: 7647-14-5
PERCENTAGE RANGE: 5.0-11.0
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

ACGIH(TLV)

ppm mg/cubic-meter

None Established
2
None Established

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN OR EYES, UPON CONTACT
WITH SKIN OR EYES, WASH OFF WITH WATER

STORAGE CONDITIONS: Store in a cool, dry, well-ventilated area. Avoid high
temperatures and exposure to and direct sunlight.

DO NOT STORE AT TEMPERATURES ABOVE: 15-21 Deg.C (60-70 Deg.F)

OTHER: Store in the dark at the lowest possible temperature, but keep
from freezing.

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: Up to 6 months at 60 Deg.F. or lower

INCOMPATIBLE MATERIALS FOR PACKAGING: Metal containers

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Oxidizers, acids,
nitrogen containing materials such as quaternary ammonium salts.

IV. PHYSICAL DATA

APPEARANCE: Greenish-yellow liquid

FREEZING POINT: No Data

BOILING POINT: Decomposes on heating

DECOMPOSITION TEMPERATURE: Decomposes as heated

SPECIFIC GRAVITY: 1.08-1.26

BULK DENSITY: Not Applicable

pH @ 25 DEG.C: > 11

VAPOR PRESSURE @ 25 DEG.C: No Data

SOLUBILITY IN WATER: Miscible

VOLATILES, PERCENT BY VOLUME: 87.5-94.5

EVAPORATION RATE: No Data

VISCOSITY: No Data

MOLECULAR WEIGHT: 74.5 (active ingredient-NaOCl)

ODOR: Chlorine-like

COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

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SUBJECT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776
PROD NO : 503030

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Respirator protection not normally needed since the volatility and toxicity are low. If vapors, mists, or aerosols are generated, wear a NIOSH/MSHA approved respirator.

VENTILATION: Local exhaust ventilation is recommended if vapors, mists or aerosols are generated. Otherwise, use general exhaust ventilation.

SKIN PROTECTIVE EQUIPMENT: Use chemical safety goggles and impermeable gloves.

EQUIPMENT SPECIFICATIONS:

RESPIRATOR TYPE: NIOSH/MSHA approved respirator equipped with chemical cartridges for protection against chlorine gas and dust mist pre-filters.

GLOVE TYPE: Neoprene

BOOT TYPE: Not normally needed

PRON TYPE: Not normally needed

PROTECTIVE SUIT: Not normally needed

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

FLAMMABLE: No

COMBUSTIBLE: No

PYROPHORIC: No

FLASH POINT: Not Applicable

AUTOIGNITION TEMPERATURE : Not Applicable

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NFPA RATINGS: Not Established

HMIS RATINGS:

Health: 3

Flammability: 0

Reactivity: 2

EXTINGUISHING MEDIA: Not applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. On small fire, use dry chemical, Carbon dioxide or water spray. On large fires, use water in flooding quantities as fog. In case of fire, hazardous concentrations of chlorine may be formed. See Section XI for personal protective equipment for fire fighting.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE

TEMPERATURES ABOVE: Decomposes as it is heated

MECHANICAL SHOCK OR IMPACT: No

ELECTRICAL (STATIC) DISCHARGE: No

OTHER: Decomposition will result from contact with iron or copper

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PRODUCT: SODIUM HYPOCHLORITE 7-15%

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HAZARDOUS POLYMERIZATION: Will not occur

INCOMPATIBLE MATERIALS: Iron, copper, acids, ammonium compounds,
organics, other oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine gas

OTHER CONDITIONS TO AVOID: High heat, sunlight and ultra-violet light

SUMMARY OF REACTIVITY:

OXIDIZER: Yes
PYROPHORIC: No
ORGANIC PEROXIDE: No
WATER REACTIVE: No

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, skin, eye, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IF INHALED OR INGESTED. HARMFUL IF EXPOSED TO SKIN OR EYES.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: Approximately 0.9 mg/m³ (0.3 ppm) based on odor of chlorine.

IRRITATION THRESHOLD: There is no data for irritation threshold. Sodium hypochlorite has the potential to be immediately dangerous to life or health.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Inhalation of this material is irritating to the nose, mouth, throat, and eyes.

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and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.

CHRONIC:

Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

SKIN

ACUTE:

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin at site of contact to regenerate.

CHRONIC:

Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

INGESTION

ACUTE:

Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration.

CHRONIC:

There are no known or reported effects from chronic exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Asthma and respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

None known or reported.

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

INHALATION LC50: No available data

ORAL LD50: Approximately 3-5 g/kg (rat)

DERMAL LD50: > 2 g/kg (rabbit)

Causes burns to eyes and skin

AQUATIC TOXICITY:

Aquatic LC50 - approximately 0.6 mg/l (bluegill)

approximately 1 mg/l (daphnia, 48 hours)

CHRONIC TOXICITY:

There are no known or reported effects from repeated exposure.

REPRODUCTIVE TOXICITY:

There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY:

This product has been shown not to be carcinogenic. It is not included as a carcinogen by IARC, OSHA, NTP, or EPA.

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MUTAGENICITY:

Sodium hypochlorite has been shown to produce damage to genetic material when tested in vitro. Studies in vivo have shown no evidence of mutagenic potential for this material. Chemicals with potent biocidal activity, typical of hypochlorite compounds, may compromise the integrity of many of the treated cells which remain viable during an in vitro assay. This result would likely produce cellular changes giving rise to a response indicative of mutation. It is judged that the risk of genetic damage is insignificant for sodium hypochlorite because of its biocidal activity, lack of mutagenicity in vivo, and failure to produce a carcinogenic response.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.
DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:
LAND (U.S. DOT): HYPOCHLORITE SOLUTIONS, 8, UN1791, PG II
WATER (IMO): Same as above
AIR (IATA/ICAO): Same as above
HARD LABEL/PLACARD: CORROSIVE
REPORTABLE QUANTITY: 100 lbs. (Per 49 CFR 172.101, Appendix)
EMERGENCY GUIDE NO: 60

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300
REPORTABLE QUANTITY (POUNDS): 100 lbs. (Per 40 CFR 302.4)

SPILL MITIGATION PROCEDURES:

Hazardous concentrations in air may be found in local spill area and immediately downwind.

AIR RELEASE: Vapors may be suppressed by the use of a water fog. Capture all run off water for treatment and disposal.

WATER RELEASE: This material is soluble in water. Dike or contain material via use of compatible absorbents. Remove material with use of vacuum or pump operation and treat before disposition. This material is harmful to aquatic life.

LAND SPILL: Compatible absorbents: Sand, clay soil, commercial absorbents

SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:

Response to this material requires the use of self contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact with this material. These items include but are not limited to boots, gloves, hard hat, impervious clothing, i.e. chemically impermeable suit. Compatible materials for response to this material are neoprene, butyl rubber, viton and saranex.

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PRODUCT: SODIUM HYPOCHLORITE 7-15%

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XII. WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations by treatment in a wastewater treatment system.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT: This substance is listed on the Toxic Substances Control Act inventory.

AMENDMENTS AND REAUTHORIZATION ACT TITLE III: None Established
HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH:

Immediate (Acute)

Delayed (Chronic)

PHYSICAL:

Fire

Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:

EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

None Established

XIV. ADDITIONAL INFORMATION

MSDS REVISION STATUS: Transportation information updated

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----- FOR ADDITIONAL INFORMATION -----

CONTACT: MSDS COORDINATOR VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)889-3400

05/12/95 16:42 PRODUCT: 503030 CUST NO: 107510 ORDER NO: 323776

----- NOTICE -----

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IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE,

WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN, AND SHALL UNDER

NO CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.***

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE
MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS
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SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&RS CONTROL AND THEREFORE USERS
ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO
DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY
ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM
THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN.
THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
PROCESS.

*** E N D O F M S D S ***

6-1-95 VAM

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203
503-286-1677 • FAX: 289-2272

VENDOR: 00897210

**ATTN KEN
VAN WATERS & ROGERS, INC.
P. O. BOX 3398
PORTLAND, OR 97208-3398**

PURCHASE ORDER NO.**89510146****INSTRUCTIONS**

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date Issued	5/01/95
Date Required	5/15/95
Terms	PORTLAND/NET 30
Via	VENDORS TRUCK
Freight Terms	FOB: DESTINATION

This order is ☐ a confirmation ☒ not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	✓ 24	PAIL	SODIUM HYPOCHLORITE 12.5%, (PAIL = 5 GAL.) Supplier #: 503030 ** ORIGINAL ORDER ** (Per Ord # P0323776 5/15/95)	V.W.R. 20-01-010		00-00-0420-0008	13.40

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

Material Safety Data Sheet

May be used to comply with
OSHA'S Hazard Communication Standard
29 CFR 2910.1200. Standard must be
consulted for specific requirements.

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

Identity (As Used on Label and List) Para Deodorant Blocks		Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.			
Section I					
Manufacturer For: Triple S		Emergency Telephone Number (800) 535-5053 (800) 654-4752			
Address (number, Street, City, State, and ZIP Code) 2 Executive Prk Drive		Telephone Number for Information (800) 654-4752 (405) 682-2541			
Billerica, MA 01862		Date Prepared 04/24/95			
		Signature of Preparer (optional)			
Section II - HMIS Rating					
Health 2		Flammability 2 Reactivity 0			
Section III - Hazardous Ingredients/Identity Information					
Hazardous Components [Specific Chemical Identity: Common Name(s)]		OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Para Dichlorobenzene* [(1,4-Dichlorobenzene), PDCB] CAS #106-46-7		75 ppm 8HR TWA	10 ppm	110 ppm (ACGIH-STEL)	99.65
UN #1952					
*This product contains Para Dichlorobenzene which is defined as a toxic chemical and subject to the reporting requirements of §313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.					
Section IV - Physical/Chemical Characteristics					
Boiling Point	345.2 °F/174°C	Specific Gravity (H ₂ O = 1) @ 55 °F / 4 °C		1.245 - 1.250	
Vapor Pressure (mm Hg.) @ 25 °C	0.92	Melting Point		127.4 °F/53 °C	
Vapor Density (AIR = 1)	5.1	Evaporation Rate		N/A	
Solubility in Water: @ 25 °C, % by Wt. 0.008					
Appearance and Odor. White block with penetrating "mothball" odor.					
Section V - Fire and Explosion Hazard Data					
Flash Point (Method Used) 150 °C (TCC)		Flammable Limits % by Vol.		LEL 2.5	UEL N/E
Extinguishing Media Water spray, foam, CO ₂ , dry chemical, or any Class B extinguishing agent					
Special Fire Fighting Procedures Wear full protective clothing and NIOSH/MSHA approved self contained breathing apparatus where exposure to vapors is possible.					
Unusual Fire and Explosion Hazards Highly toxic gases (Hydrogen Chloride, Chlorine, and traces of Phosgene) can be evolved in fires of this product.					

N/A = Not Applicable N/D = Not Determined N/E = Not Established
NOV-01-1996 11:37 14056814219

Page 1

OSHA 174, Sept. 1985
P. 06

Section VI - Reactivity Data

Stability	Unstable		Conditions to Avoid: Keep away from open flame and sparks.
	Stable	X	
Incompatibility (Materials to Avoid): Strong oxidizers, oxidizing agents, hot aluminum or aluminum alloys			
Hazardous Decomposition or Byproducts: Carbon Monoxide, Carbon Dioxide, smoke, soot, Hydrogen Chloride and Phosgene			
Hazardous Polymerization	May Occur		Conditions to Avoid: None
	Will Not Occur	X	

Section VII - Health Hazard Data

Route(s) of Entry:	Inhalation? Yes	Skin? Yes	Ingestion? Yes (Unlikely)
Health Hazards (Acute and Chronic): Inhalation and ingestion of PSCE at concentrations well above per can cause depression of the nervous system. Vapor may cause irritation of skin and eyes and has been known to cause liver damage in rats and rabbits.			
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
PDCB has been listed by the NTP as a substance that is "reasonably anticipated to be" carcinogenic. IARC has been classified as "possibly carcinogenic to humans". It is also listed carcinogen under California Prop. 65.			
Signs and Symptoms of Exposure: Headache; dizziness; eyes, nose and throat irritation; nausea; feeling of drunkenness; cardiac sensitization if concentration above TLV.			
Medical Conditions Generally Aggravated by Exposure: Asthma or other respiratory disorders; blood, liver and kidney disorders			
Emergency and First Aid Procedures: Eyes - flush with plenty of water for at least 15 minutes; get medical attention. Skin - flush affected area with plenty of water for at least 15 minutes; if irritation develops, get medical attention. Inhalation - remove person to fresh air; give artificial respiration if breathing has stopped; get medical attention. Ingestion - do not induce vomiting; get medical attention.			

Section VIII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:	Scoop up and put in closed container.
Waste Disposal Method:	Material should be burned in an approved incinerator or disposed of in an approved dump in accordance with local, state and federal regulations.
Other precautions:	Store away from heat and open flame. Avoid excessive inhalation and contact with skin and eyes.

Section IX - Control Measures

Respiratory Protection (Specify Type):			
Ventilation	Local Exhaust	Well Ventilated	Special N/A
	Mechanical (General)	N/A	Other N/A
Protective Gloves: None	Eye Protection: Do not rub eyes with contaminated hands		
Other Protective Clothing or Equipment: Eye wash/shower facility nearby			
Work/Hygienic Practices: Good housekeeping practices. Avoid skin/eye contact. Wash thoroughly with soap and water after coming in contact with product.			

MATERIAL SAFETY DATA SHEET
DERMAPLUS SKIN PROTECTANT

Latest Revision Date... 05/04/95
Print Date... 05/04/95

SECTION 1

PRODUCT IDENTIFICATION

PRODUCT NAME OR NUMBER.....DERMAPLUS SKIN PROTECTANT

HAZARD RATING.....

Health	0	0 = Least
		1 = Slight
Fire	0	2 = Moderate
		3 = High
Reactivity	0	4 = Extreme

Copied

MANUFACTURER'S NAME.....BENCHMARK COMMERCIAL, INC.
COMPANY ADDRESS.....466 LAWNDALE DR., #D
SALT LAKE CITY, UTAH 84115
COMPANY PHONE NUMBER.....(801) 463-3901
EMERGENCY PHONE NUMBER.....(801) 463-3901
TRADE NAME.....DERMAPLUS

SECTION 2

PHYSICAL DATA

APPEARANCE.....WHITE MOUSSE
ODOR.....MILD PLEASANT ODOR
SPECIFIC GRAVITY @ 25°C.....0.94
SOLUBILITY IN WATER.....OIL-IN-WATER EMULSION
VAPOR PRESSURE mm Hg @ 20° C.....NOT DETERMINED
BOILING/MELTING POINT @ 760 mm Hg.....212°F (100° C)
VAPOR DENSITY (AIR = 1).....NOT DETERMINED
EVAPORATION RATE (BuAc = 1).....NOT DETERMINED
PERCENT VOLATILE BY WEIGHT (%).....10.0 (CONTENT OF AEROSOL PROPELLANT)
PH.....7.4

SECTION 3

FIRE, EXPLOSION AND REACTIVITY HAZARD DATA

FLASH POINT °F.....NON-FLAMMABLE (FLASH PROJECTION TEST)
FLAMMABILITY LIMITS IN AIR (% V).....N/A
EXTINGUISHING MEDIA.....N/A
SPECIAL FIRE FIGHTING PROCEDURES.....N/A
UNUSUAL FIRE & EXPLOSION HAZARDS.....NONE KNOWN
PRODUCT ADAPTABILITY.....STABLE
CHEMICAL INCOMPATIBILITY.....STRONG OXIDIZING AGENTS
HAZARDOUS DECOMPOSITION PRODUCTS...CARBON DIOXIDE OR CARBON MONOXIDE
HAZARDOUS POLYMERIZATION.....WILL NOT OCCUR

SECTION 4

HEALTH HAZARD INFORMATION

The exact percentages for components of this product constitute a trade secret. Although the below listed chemicals can be considered to be hazardous in their pure concentrated state, in the low concentrations found in the product, they do not pose a serious threat to users. Testing has shown that the product is not a primary dermal or ocular irritant, and is not orally toxic.

**MATERIAL SAFETY DATA SHEET
DERMAPLUS SKIN PROTECTANT**

SECTION 4

HEALTH HAZARD INFORMATION

Note that possible effects in test animals are reported for continual overexposure to components of this product mixture. Many of the substances having various effects are natural components of common foods and are not known to be harmful in normal use.

SECTION 5

HAZARDOUS INGREDIENTS * EXPOSURE LIMITS**

CHEMICAL NAME(S)	CAS NUMBER	ACGIH/TLV	OSHA/PEL
AEROSOL PROPELLANT	75-28-5, 74-98-6		
	106-97-8	800-1000 ppm	800-1000 ppm
DIMETHICONE	63148-62-9	NONE	NONE
STEARIC ACID	57-11-4	NONE	NONE
COCONUT FATTY ACID	61788-47-4	NONE	NONE
ISOPROPYL MYRISTATE	110-27-0	NONE	NONE
GLYCERIN	56-81-5	NONE	NONE
TRIETHANOLAMINE	102-71-6	NONE	NONE
POLYVINYLPIRROLIDONE	9003-39-8	NONE	NONE

SECTION 6

HEALTH HAZARD DATA

ROUTE(S) OF ENTRY: INHALATION - Not Likely SKIN - None INGESTION - Not Likely

HEALTH HAZARDS (ACUTE AND CHRONIC): None Currently Known. When properly applied and allowed to dry, the transfer of DERMPLUS to anything within its environmental presence is negligible.

CARCINOGENICITY: NPT? - None IARC MONOGRAPH ? - None OCHHA REGULATED? - No

SIGNS AND SYMPTOMS OF EXPOSURE: None

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None Known

EMERGENCY AND FIRST AID PROCEDURES: Normally non-irritating. Flush eyes with water for several minutes if contact occurs. Cannot be inhaled unless deliberately attempted. Small amounts could be ingested without undue discomfort. Discontinue use if irritation or discomfort occurs. Seek medical attention if condition persists.

SECTION 7

EFFECTS OF OVEREXPOSURE * FIRST AID PROCEDURES**

Primary Routes of Exposure: Eye or Skin Contact

Signs and Symptoms of EYES: The compound did not induce irritation or cause sensitization.

Overexposure:

SKIN: The compound was found to be non-irritant to intact and abraded skin.

SWALLOWING: Considered non-toxic, however, consult with a physician if nausea becomes apparent.

Emergency First-Aid

Procedures:

SKIN: None necessary.

EYES: Not considered an ocular irritant. If discomfort occurs rinse with water several minutes. Get medical attention if necessary.

INGESTION: Considered non-toxic. Contact physician if nausea occurs.

MATERIAL SAFETY DATA SHEET
DERMAPLUS SKIN PROTECTANT

SECTION 8

PRECAUTIONS FOR SAFE HANDLING AND USE

RESPIRATORY PROTECTION..... None required.
VENTILATION..... No special ventilation required.
PROTECTIVE CLOTHING..... None required.
EYE PROTECTION..... None required.
HANDLING INSTRUCTIONS..... Avoid crushing or piercing. Avoid storing where extreme temperatures, [130°F (54°C) and above, 32°F (0°C) and below] would exist. Keep out of reach of small children.

SECTION 9

SPILL OR LEAK PROCEDURES * WASTE DISPOSAL METHOD**

In case of spill or leak..... Flush with water, collect with absorbent material, place in waste container for transfer to landfill according to local, state and federal regulations.
Waste Disposal Method..... Do not incinerate

SECTION 10

REGULATORY INFORMATION

FEDERAL EPA

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQ's) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:
*****NONE*****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQ's) and release reporting based on Reportable Quantities (RQ's) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:
*****NONE*****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS's that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:
*****NONE*****

Toxic Substances Control Act (TSCA) STATUS:

The ingredients of this product are on the TSCA inventory.

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

MATERIAL SAFETY DATA SHEET
DERMAPLUS SKIN PROTECTANT

SECTION 10

REGULATORY INFORMATION

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

*****NONE*****

PENNSYLVANIA Right-To-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

HAZARDOUS SUBSTANCES (\Rightarrow 1%)

*****NONE*****

CALIFORNIA SCAQMD RULE 443.1 VOC'S:

Volatiles - substances with a vapor pressure of \Rightarrow 0.5 mmHg at 104 C (219.2F).

This product contains:

93.84 g/liter VOC's

SECTION 11

SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101-102) -	Consumer Commodity
HAZARDOUS SUBSTANCE (49 CFR CERCLA List) -	Yes
REPORTABLE QUANTITY (RQ) -	N/A
D.O.T. HAZARD CLASSIFICATION (49 CFR 172.101-102)	
PRIMARY -	ORM-D
SECONDARY -	None
D.O.T. LABELS REQUIRED (49 CFR 172.101-102) -	ORM-D (ground shipments)
	ORM-D-AIR (air shipments)
D.O.T. PLACARDS REQUIRED (49 CFR 172.504) -	None
POLSON CONSTITUENT (49 CFR 172.203 (K)) -	None
BILL OF LADING DESCRIPTION -	Consumer Commodity, Cosmetics, IIAZ

SECTION 12

DISCLAIMER

The information in this Material Safety Data Sheet is believed to be reliable, but is provided without warranty regarding its accuracy. Users must determine safe conditions for use and assume liability for any loss, injury, damage or expense resulting from use of this product.

KEY

NA - Not Applicable
NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
IARC - International Agency for Research on Cancer
ACGIH - American Conference of Industrial Hygienists
VOC - Volatile Organic Carbons

1420 Harbor Bay Parkway
Suite 210
Alameda, California 94501
800-548-8381

MATERIAL SAFETY DATA SHEET

FLEISCHMANN'S VINEGAR REACTIVITY DATA

Stability

[X] Stable
[] Unstable

Hazard Polymerization

[X] Will not occur
[] May occur

Incompatibility:

Contact with strong oxidizers may cause fires and will react with strong caustics to cause violent spattering and heat.

Hazardous decomposition products:

— May produce carbon monoxide (CO) and/or carbon dioxide (CO₂).

SPILL OR LEAK PROCEDURES

If vinegar is spilled, dike to contain, ventilate area, dilute with water: may be neutralized with addition of soda ash.

Do not flush to streams or sewers.

Waste Disposal Methods:

Treatment or disposal of waste generated by use of vinegar should be reviewed in terms of applicable federal, state and local laws and regulations. Users are advised to consult with appropriate regulatory agencies before discharge, treatment or disposal.

SPECIAL PROTECTION INFORMATION

Respiratory Protection:

As required to prevent exposure to concentrations which exceed the permissible level.

Ventilation:

Local exhaust recommended. Mechanical recommended.

Eyes and Face:

Safety glasses or plastic face shield required.

Hands, Arms, Body:

Rubber or neoprene gloves recommended.
Rubber apron or other protective equipment as required to reduce direct contact.

Other Equipment:

Eye wash station, safety shower.

PHYSICAL DATA

Appearance and Odor
Appropriate color and odor for
type of vinegar

Vapor Pressure (MM Hg)
11 MM

% Volatiles by Volume
100%

Specific Gravity
1.01 - 1.04

Boiling Point
215°F @ 100 grain

pH
2.2 @ 100 grain

Solubility in Water
Complete

Vapor Density (Air=)
2.1



(Rev. 9/92)

Fleischmann's
A Division of Burns Philp Food Inc.

Fleischmann's
Vinegar

JUN 5 1995

Pure Culture
Products

MATERIAL SAFETY DATA SHEET**FLEISCHMANN'S VINEGAR**

Date Issued: September 3, 1992
Trade Name: Vinegar, All Varieties
Chemical Name: Acetic Acid
Chemical Formula: CH_3COOH
Definition: Product made by the acetic fermentation of ethyl alcohol and contains 5 to 30% acetic acid (or 50 to 300 grain vinegar).

Manufacturer's Name and Address:

Integrated Ingredients
1420 Harbor Bay Parkway Suite 210
Alameda, CA 94501
800-548-8381

Phone Number:

HEALTH HAZARD DATA

Inhalation: Threshold Limit Value: 10 ppm
Short Term Exposure Limit 15 ppm for 15 minutes
Odor Threshold 1.0 ppm

Inhalation of vapors can cause irritation to respiratory tract.

Skin: Contact may cause mild injury and burns from vinegars of 10% acetic acid and greater. Dilute solutions may cause dermatitis in some sensitive individuals.

Eyes: Contact may cause severe burns and permanent corneal injury from concentrated vinegars. May be followed by blindness. High vapor concentrations may result in conjunctivitis.

Ingestion: Concentrated vinegars may cause pain, irritation and burns in mouth, esophagus and stomach.

EMERGENCY & FIRST-AID PROCEDURES

In case of eye or skin contact, flush immediately and thoroughly with water.
Saturated clothing should be removed and washed.
If vapors are inhaled extensively, exposed person should be removed to fresh air immediately.
If swallowed, water should be consumed to dilute.
Do not induce vomiting.
Do not give emetics or baking soda.
Call a physician.

FIRE AND EXPLOSION HAZARD DATA

Flash Point: 40°C closed cup
(Acetic Acid)
Auto Ignition Temperature: 427°C
(Acetic Acid)
Flammable Limits in Air: 4.0% - 16%
(Acetic Acid)

Fire Extinguishing Agents Recommended:

Water spray, foam CO_2 or dry chemical. Water may be used to dilute spills and reduce flammability.

Unusual fire and explosion hazards:

Toxic gases and vapors may be released in a fire involving concentrated vinegars.



ANNUAL CERTIFICATION, REPRESENTATIONS AND DISCLOSURES

SMALL BUSINESS CONCERN REPRESENTATION

- (a) **Representation.** The Seller represents and certifies that it () is, () is not, a small business concern and that () all, () if not all, end items to be furnished under any order issued by Philip Environmental Inc. (the Buyer) will be manufactured or produced by a small business concern in the United States, its territories or possessions, Puerto Rico, or the Trust Territory of the Pacific Islands.
- (b) **Definition.** Small business concern, as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria and size standards prescribed by the Small Business Administration (see Code of Federal Regulations, Title 13 - Part 12, as amended, which contains detailed industry definitions and related procedures).

SMALL DISADVANTAGED BUSINESS CONCERN

- (a) **Definition.** "Small disadvantaged business concern", as used in this provision, means a small business concern, including mass media, owned and controlled by individuals who are both socially and economically disadvantaged, as defined in regulations prescribed by the US Small Business Administration at 13 CFR Part 124, the majority of earnings of which directly accrue to such individuals. (13 CFR Part 124 generally provides that a small disadvantaged business concern is a small business concern (1) which is at least fifty-one percent (51%) owned by one or more socially and economically disadvantaged individuals; or in the case of any publicly owned business, at least fifty-one percent (51%) of the voting stock of which is owned by one or more socially and economically disadvantaged individuals, and (2) whose management and daily business operations are controlled by one or more such individuals.) See 13 CFR 124.101 through 124.110.
- (b) **Representation.** The Seller represents that its qualifying ownership falls within at least one of the following categories (check the applicable categories):
- ___ Subcontinent Asian (Asian-Indian) American (US Citizen with origins from India, Pakistan, Bangladesh or Sri Lanka)
 - ___ Asian-Pacific American (US Citizen with origins from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, US Trust Territory of the Pacific Islands, Northern Mariana Islands, Laos, Cambodia, Taiwan, Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Republic of the Marshall Islands, or the Federated States of Micronesia).
 - ___ Black American (US Citizen)
 - ___ Hispanic American (US Citizen with origins from South America, Central America, Mexico, Cuba, the Dominican Republic, Puerto Rico, Spain, Portugal)
 - ___ Native American (American Indians, Eskimos, Aleuts, or Native Hawaiians)
 - ___ Other
- (c) **Certification.**
- (1) The Seller represents and certifies that it () is, () is not, a small disadvantaged business concern.
- (2) (Complete only if item (b) above is checked "Other") The Seller represents and certifies that the Small Business Administration (SBA) () has, () has not, made a determination concerning the Seller's status as a small disadvantaged business concern. If the SBA has made such a determination, the date of the determination was _____ and the Seller certifies that it () was, () was not, found by the SBA to be socially and economically disadvantaged as a result of that determination and that no circumstances have changed to vary that determination.
- (d) **Notification.** The Seller agrees to notify the Buyer before award of any subcontract by Buyer of any change in its status as a small disadvantaged business concern occurring between the date of this certification and contract award.
- (e) **Penalty.** The Seller represents and certifies that the above information is true and understands that whoever for the purpose of securing a contract, or subcontract under subsection (a) of Section 1207 of Public Law 99-166 misrepresents the status of any concern or person as a small business concern owned and controlled by a minority as described in subsection (a) shall be punished by a fine of not less than \$10,000 or by imprisonment for not more than one (1) year, or both.

8(a) CERTIFIED BUSINESS CONCERN

The Seller represents that it () is, () is not, an 8(a) certified business. The 8(a) Contracting and Business Development Program, started in 1968, is named for the section of the Small Business Act from which it derives its authority. Through the 8(a) program, small companies owned by socially and economically disadvantaged persons can obtain Federal Government contracts and other assistance in developing their businesses. Economically disadvantaged individuals are socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities, as compared to others in the same or similar line of business and competitive market area who are not socially disadvantaged. In determining the degree of economic disadvantage, consideration is given to the following:

- (1) the personal financial condition of the individual(s) claiming disadvantaged status, including the individual's access to capital and credit;
- (2) the financial condition of the business; and
- (3) the applicant's access to capital, credit, and markets. An individual whose personal net worth exceeds \$250,000, excluding his/her ownership interest in the applicant firm and equity in his/her personal residence, will not be considered economically disadvantaged for purposes of program entry.

Every 8(a) certified business participates in the program for nine years from the date an applicant is certified as a program participant. The term is divided into two stages: a four-year developmental stage, and a five-year transitional stage. A variety of program benefits are available during both stages.

WOMEN-OWNED BUSINESS CONCERN

The Seller represents that it () is, () is not, a woman-owned business. A women-owned business is a small business concern that is at least fifty-one percent (51%) owned by women who are United States citizens and who also control and operate the business.

TYPE OF BUSINESS ORGANIZATION

The Seller represents and certifies that (check all applicable boxes or blocks) it operates as () an individual, () a partnership, () a nonprofit organization, () a corporation, incorporated under the laws of the State of _____.

LABOR SURPLUS AREA CLASSIFICATION

The Seller represents that it () is, () is not, located in a labor surplus area as defined by the Secretary of Labor under Executive Order 12073 and 10582.

CERTIFICATION OF NONSEGREGATED FACILITIES

- (a) "Segregated facilities" as used in this provision, means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color religion, or national origin because of habit, local custom or otherwise.
- (b) The Seller certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Seller agrees that a breach of this certification is a violation of the Equal Opportunity clause in the subcontract awarded to Seller by Buyer.
- (c) The Seller further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will:
- (1) Obtain identical certifications from proposed subcontractors before the award of subcontracts under which the subcontractor will be subject to the Equal Opportunity clause;
 - (2) Retain the certifications in the files; and
 - (3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract under which the subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

PREVIOUS CONTRACTS AND COMPLIANCE REPORTS

The Seller represents that:

- (a) It () has, () has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the clause originally contained in Section 31C of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114;
- (b) It () has, () has not, filed all required compliance reports; and
- (c) Representations indicating submission of required compliance reports, signed by proposed contractors, will be obtained before subcontract awards.

EQUAL EMPLOYMENT/AFFIRMATIVE ACTION COMPLIANCE

Supplier () has, () has not, held contracts or subcontracts subject to Executive Order 11246 and 11375.

Supplier () has, () has not, filed required EEO-1 and VETS100 Reports.

The EEO/Affirmative Action program of this firm () has, () has not, been subject to a government compliance review. If so, when? _____

Supplier () has, () has not, held contracts or subcontracts in aggregate amounts of \$10,000 (), \$50,000 ().

Supplier () has, () has not, developed a written Affirmative Action Program for each of its establishments.

Supplier () will, () will not, develop a written Affirmative Action Program within 120 days after the award of this subcontract.

Supplier () has, () has not, applied to the State Employment Service for a "Certificate of Eligibility" as a minority/women-owned business for Federal procurement contract preference. If so, when? _____

This firm acknowledges receipt of notice to subcontractors of requirements for certification of nonsegregated facilities and () hereby certifies, () does not certify, that it operates in accordance therein.

Supplier () will, () will not, comply with the provisions for employment of Disabled Veterans and/or Vietnam Era Veterans.

Supplier () will, () will not, comply with the provisions for employment of individuals with handicaps.

Supplier () will, () will not, make provisions for minority/women-owned business enterprises to participate in bidding for performance of contracts.

The Seller represents that (a) it () has developed and has on file, () has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or (b) it () has, () has not, previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS

- (a) (1) The Seller certifies, to the best of its knowledge and belief, that:
- (i) The Seller and/or any of its Principals:
 - (A) () are, () are not, presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal Agency;
 - (B) () have, () have not, within a 3-year period preceding the date of this certification, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; and
 - (C) () are, () are not, presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a) (1) (B) of this provision.
 - (ii) The Seller () has, () has not, within a 3-year period preceding this certification, had one or more contracts terminated for default by any Federal agency.
 - (iii) The Seller or any of its employees () are not, () are in, violation of the Federal Procurement Integrity Act on Section 1352 of Title 31, United States Code or any other Anti-Kick Back related law, which prohibits activities that may influence Federal employees who are involved in the procurement or administration of Federal contracts.
- (2) "Principals", for the purposes of this certification, means officers, directors, owners, partners, and persons having primary management or supervisory responsibilities within a business entity (e.g., general manager, plant manager, head of a subsidiary, division, or business segment, and similar positions).

This certification concerns a matter within the jurisdiction of an agency of the United States and the making of a false, fictitious, or fraudulent certification that may render the maker subject to prosecution under section 1001, Title 18, United States Code.

- (b) The Seller shall provide immediate written notice to Buyer if, at any time prior to contract award, the Seller learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- (c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award. However, the certification will be considered in connection with a determination of the Seller's responsibility. Failure of the Seller to furnish a certification or provide such additional information as requested by Buyer may render Seller nonresponsible.
- (d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of a Seller is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- (e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance placed when making award. If it is later determined that the Seller knowingly rendered an erroneous certification, in addition to the other remedies available to the Government and Buyer, the Buyer may terminate the contract resulting from this solicitation or default.



**NORTH AMERICAN
CHEMICAL OPERATIONS**

WESTERN DIVISION OFFICE

1100 Oakesdale Avenue SW
Renton, Washington 98055
Main: 206/227-0311
Fax: 206/204-7164
Toll Free: 800/882-9785

Mailing Address:
955 Powell Avenue SW
Renton, WA 98055

June 26, 1995

To All Philip Environmental Inc. (formerly known as Burlington Environmental Inc.) Vendors & Subcontractors:

SUBJECT: Annual Certification, Representations and Disclosures

Philip Environmental Inc.'s participation in government contracts requires periodic review of our files to assure that we have correctly recorded our suppliers' self-certification of business size, status, Small Disadvantaged Business Enterprise status, compliance with Equal Opportunity requirements and other rules and regulations promulgated by the government. Please check the appropriate boxes listed on all sides of this certificate. If your company is no longer considered a current vendor with our company, a written statement to this effect would be appreciated.

Please have a duly authorized officer of your company sign the certificate on the last page and return within 30 days to:

**Philip Environmental Inc.
1100 Oakesdale SW
Renton, WA 98055
Attn: Purchasing Department**

Sincerely,

**G. Jay Bulson
Human Resources Manager**

ANNUAL CERTIFICATION, REPRESENTATIONS AND DISCLOSURES

SMALL BUSINESS CONCERN REPRESENTATION

- (a) *Representation.* The Seller represents and certifies that it () is, () is not, a small business concern and that () all, () if not all, end items to be furnished under any order issued by Philip Environmental Inc. (the Buyer) will be manufactured or produced by a small business concern in the United States, its territories or possessions, Puerto Rico, or the Trust Territory of the Pacific Islands.
- (b) *Definition.* Small business concern, as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria and size standards prescribed by the Small Business Administration (see Code of Federal Regulations, Title 13 - Part 12, as amended, which contains detailed industry definitions and related procedures).

SMALL DISADVANTAGED BUSINESS CONCERN

- (a) *Definition.* "Small disadvantaged business concern", as used in this provision, means a small business concern, including mass media, owned and controlled by individuals who are both socially and economically disadvantaged, as defined in regulations prescribed by the US Small Business Administration at 13 CFR Part 124, the majority of earnings of which directly accrue to such individuals. (13 CFR Part 124 generally provides that a small disadvantaged business concern is a small business concern (1) which is at least fifty-one percent (51%) owned by one or more socially and economically disadvantaged individuals; or in the case of any publicly owned business, at least fifty-one percent (51%) of the voting stock of which is owned by one or more socially and economically disadvantaged individuals, and (2) whose management and daily business operations are controlled by one or more such individuals.) See 13 CFR 124.101 through 124.110.
- (b) *Representation.* The Seller represents that its qualifying ownership falls within at least one of the following categories (check the applicable categories):
- ☐ Subcontinent Asian (Asian-Indian) American (US Citizen with origins from India, Pakistan, Bangladesh or Sri Lanka)
 - ☐ Asian-Pacific American (US Citizen with origins from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, US Trust Territory of the Pacific Islands, Northern Mariana Islands, Laos, Cambodia, Taiwan, Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Republic of the Marshall Islands, or the Federated States of Micronesia)
 - ☐ Black American (US Citizen)
 - ☐ Hispanic American (US Citizen with origins from South America, Central America, Mexico, Cuba, the Dominican Republic, Puerto Rico, Spain, Portugal)
 - ☐ Native American (American Indians, Eskimos, Aleuts, or Native Hawaiians)
 - ☐ Other
- (c) *Certification.*
- (1) The Seller represents and certifies that it () is, () is not, a small disadvantaged business concern.
- (2) (Complete only if item (b) above is checked "Other") The Seller represents and certifies that the Small Business Administration (SBA) () has, () has not, made a determination concerning the Seller's status as a small disadvantaged business concern. If the SBA has made such a determination, the date of the determination was _____ and the Seller certifies that it () was, () was not, found by the SBA to be socially and economically disadvantaged as a result of that determination and that no circumstances have changed to vary that determination.
- (d) *Notification.* The Seller agrees to notify the Buyer before award of any subcontract by Buyer of any change in its status as a small disadvantaged business concern occurring between the date of this certification and contract award.
- (e) *Penalty.* The Seller represents and certifies that the above information is true and understands that whoever for the purpose of securing a contract, or subcontract under subsection (a) of Section 1207 of Public Law 99-166 misrepresents the status of any concern or person as a small business concern owned and controlled by a minority as described in subsection (a) shall be punished by a fine of not less than \$10,000 or by imprisonment for not more than one (1) year, or both.

8(a) CERTIFIED BUSINESS CONCERN

The Seller represents that it () is, () is not, an 8(a) certified business. The 8(a) Contracting and Business Development Program, started in 1968, is named for the section of the Small Business Act from which it derives its authority. Through the 8(a) program, small companies owned by socially and economically disadvantaged persons can obtain Federal Government contracts and other assistance in developing their businesses. Economically disadvantaged individuals are socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities, as compared to others in the same or similar line of business and competitive market area who are not socially disadvantaged. In determining the degree of economic disadvantage, consideration is given to the following:

- (1) the personal financial condition of the individual(s) claiming disadvantaged status, including the individual's access to capital and credit;
- (2) the financial condition of the business; and
- (3) the applicant's access to capital, credit, and markets. An individual whose personal net worth exceeds \$250,000, excluding his/her ownership interest in the applicant firm and equity in his/her personal residence, will not be considered economically disadvantaged for purposes of program entry.

Every 8(a) certified business participates in the program for nine years from the date an applicant is certified as a program participant. The term is divided into two stages: a four-year developmental stage, and a five-year transitional stage. A variety of program benefits are available during both stages.

WOMEN-OWNED BUSINESS CONCERN

The Seller represents that it () is, () is not, a woman-owned business. A women-owned business is a small business concern that is at least fifty-one percent (51%) owned by women who are United States citizens and who also control and operate the business.

TYPE OF BUSINESS ORGANIZATION

The Seller represents and certifies that (check all applicable boxes or blocks) it operates as () an individual, () a partnership, () a nonprofit organization, () a corporation, incorporated under the laws of the State of _____.

LABOR SURPLUS AREA CLASSIFICATION

The Seller represents that it () is, () is not, located in a labor surplus area as defined by the Secretary of Labor under Executive Order 12073 and 10582.

CERTIFICATION OF NONSEGREGATED FACILITIES

- (a) "Segregated facilities" as used in this provision, means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color religion, or national origin because of habit, local custom or otherwise.
- (b) The Seller certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Seller agrees that a breach of this certification is a violation of the Equal Opportunity clause in the subcontract awarded to Seller by Buyer.
- (c) The Seller further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will:
 - (1) Obtain identical certifications from proposed subcontractors before the award of subcontracts under which the subcontractor will be subject to the Equal Opportunity clause;
 - (2) Retain the certifications in the files; and
 - (3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract under which the subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

PREVIOUS CONTRACTS AND COMPLIANCE REPORTS

The Seller represents that:

- (a) It () has, () has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the clause originally contained in Section 310 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114;
- (b) It () has, () has not, filed all required compliance reports; and
- (c) Representations indicating submission of required compliance reports, signed by proposed contractors, will be obtained before subcontract awards.

EQUAL EMPLOYMENT/AFFIRMATIVE ACTION COMPLIANCE

Supplier () has, () has not, held contracts or subcontracts subject to Executive Order 11246 and 11375.

Supplier () has, () has not, filed required EEO-1 and VETS100 Reports.

The EEO/Affirmative Action program of this firm () has, () has not, been subject to a government compliance review. If so, when? _____

Supplier () has, () has not, held contracts or subcontracts in aggregate amounts of \$10,000 (), \$50,000 ().

Supplier () has, () has not, developed a written Affirmative Action Program for each of its establishments.

Supplier () will, () will not, develop a written Affirmative Action Program within 120 days after the award of this subcontract.

Supplier () has, () has not, applied to the State Employment Service for a "Certificate of Eligibility" as a minority/women-owned business for Federal procurement contract preference. If so, when? _____

This firm acknowledges receipt of notice to subcontractors of requirements for certification of nonsegregated facilities and () hereby certifies, () does not certify, that it operates in accordance therein.

Supplier () will, () will not, comply with the provisions for employment of Disabled Veterans and/or Vietnam Era Veterans.

Supplier () will, () will not, comply with the provisions for employment of individuals with handicaps.

Supplier () will, () will not, make provisions for minority/women-owned business enterprises to participate in bidding for performance of contracts.

The Seller represents that (a) it () has developed and has on file, () has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or (b) it () has, () has not, previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS

(a) (1) The Seller certifies, to the best of its knowledge and belief, that:

(i) The Seller and/or any of its Principals:

(A) () are, () are not, presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal Agency;

(B) () have, () have not, within a 3-year period preceding the date of this certification, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; and

(C) () are, () are not, presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a) (1) (B) of this provision.

(ii) The Seller () has, () has not, within a 3-year period preceding this certification, had one or more contracts terminated for default by any Federal agency.

(iii) The Seller or any of its employees () are not, () are in, violation of the Federal Procurement Integrity Act on Section 1352 of Title 31, United States Code or any other Anti-Kick Back related law, which prohibits activities that may influence Federal employees who are involved in the procurement or administration of Federal contracts.

(2) "Principals", for the purposes of this certification, means officers, directors, owners, partners, and persons having primary management or supervisory responsibilities within a business entity (e.g., general manager, plant manager, head of a subsidiary, division, or business segment, and similar positions).

This certification concerns a matter within the jurisdiction of an agency of the United States and the making of a false, fictitious, or fraudulent certification that may render the maker subject to prosecution under section 1001, Title 18, United States Code.

(b) The Seller shall provide immediate written notice to Buyer if, at any time prior to contract award, the Seller learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award. However, the certification will be considered in connection with a determination of the Seller's responsibility. Failure of the Seller to furnish a certification or provide such additional information as requested by Buyer may render Seller nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of a Seller is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance placed when making award. If it is later determined that the Seller knowingly rendered an erroneous certification, in addition to the other remedies available to the Government and Buyer, the Buyer may terminate the contract resulting from this solicitation or default.

CERTIFICATION OR DISCLOSURE OF OWNERSHIP OR CONTROL BY A FOREIGN GOVERNMENT THAT SUPPORTS TERRORISM

(a) "Significant interest" as used in this provision means:

- (1) Ownership of or beneficial interest in five percent (5%) or more of the firm's or subsidiary's securities. Beneficial interest includes holding five percent (5%) or more of any class of the firm's securities in "nominee shares", "street named", or some other method of holding securities that does not disclose the beneficial owner.
 - (2) Holding a management position in the firm such as director or officer;
 - (3) Ability to control or influence the election, appointment, or tenure of directors or officers of the firm;
 - (4) Ownership of ten percent (10%) or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm, or
 - (5) Holding fifty percent (50%) or more of the indebtedness of a firm.
- (b) Unless paragraph (c) below has been completed, the Seller certifies, to the best of its knowledge and belief, that no government of a foreign country, or agent or instrumentality of a foreign country, listed below, has directly or indirectly, a significant interest in the Seller or, if the Seller is a subsidiary, in the firm that owns or controls, directly or indirectly, Seller. Such countries currently include:
- (1) Cuba; (2) Iran; (3) Libya; (4) Syria; and (5) South Yemen
- (c) If Seller is unable to certify in accordance with (b) above, the Seller represents that the following country or countries (listed in (b) above) or an agent or instrumentality of such country or countries, have a significant interest in the Seller's firm:

Country _____

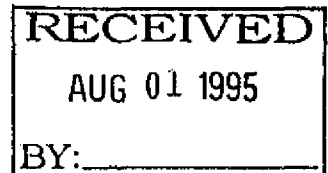
Significant Interest: _____

(Company Name)

(Contact Person)

(Title of Contact Person)

(Phone Number)



I hereby certify that the above information is true, correct and complete.

(Signature of Authorized Signer)

(Date)

(Title of Authorized Signer)

CERTIFICATION OR DISCLOSURE OF OWNERSHIP OR CONTROL BY A FOREIGN GOVERNMENT THAT SUPPORTS TERRORISM

- (a) "Significant interest" as used in this provision means:
- (1) Ownership of or beneficial interest in five percent (5%) or more of the firm's or subsidiary's securities. Beneficial interest includes holding five percent (5%) or more of any class of the firm's securities in "nominee shares", "street named", or some other method of holding securities that does not disclose the beneficial owner.
 - (2) Holding a management position in the firm such as director or officer;
 - (3) Ability to control or influence the election, appointment, or tenure of directors or officers of the firm;
 - (4) Ownership of ten percent (10%) or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm, or
 - (5) Holding fifty percent (50%) or more of the indebtedness of a firm.
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- (1) Cuba; (2) Iran; (3) Libya; (4) Syria; and (5) South Yemen
- (c) If Seller is unable to certify in accordance with (b) above, the Seller represents that the following country or countries (listed in (b) above) or an agent or instrumentality of such country or countries, have a significant interest in the Seller's firm:

Country _____

Significant Interest: _____

(Company Name)

(Contact Person)

(Title of Contact Person)

(Phone Number)

I hereby certify that the above information is true, correct and complete.

(Signature of Authorized Signer)

(Date)

(Title of Authorized Signer)



**NORTH AMERICAN
CHEMICAL OPERATIONS**

June 26, 1995

To All Philip Environmental Inc. (formerly known as Burlington Environmental Inc.) Vendors & Subcontractors:

SUBJECT: Annual Certification, Representations and Disclosures

Philip Environmental Inc.'s participation in government contracts requires periodic review of our files to assure that we have correctly recorded our suppliers' self-certification of business size, status, Small Disadvantaged Business Enterprise status, compliance with Equal Opportunity requirements and other rules and regulations promulgated by the government. Please check the appropriate boxes listed on all sides of this certificate. If your company is no longer considered a current vendor with our company, a written statement to this effect would be appreciated.

Please have a duly authorized officer of your company sign the certificate on the last page and return within 30 days to:

Philip Environmental Inc.
1100 Oakesdale SW
Renton, WA 98055
Attn: Purchasing Department

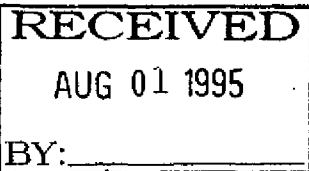
Sincerely,

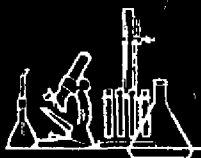
G. Jay Bulson
Human Resources Manager

WESTERN DIVISION OFFICE

1100 Oakesdale Avenue SW
Renton, Washington 98055
Main: 206/227-0311
Fax: 206/204-7164
Toll Free: 800/882-9785

Mailing Address:
955 Powell Avenue SW
Renton, WA 98055





POLYGEM, INC.

1105 CAROLINA DRIVE WEST CHICAGO, IL 60185 TEL: (708)231-5600 FAX: (708)231-5604

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910, 1200

Date of Preparation: 7/1/95 HEALTH - 1 FLAMMABILITY - 1 REACTIVITY - 1 OTHER - NONE

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC #500 HI TEMPERATURE RED

PRODUCT APPEARANCE: Paste like, red, Acidic Acid Odor

CHEMICAL NAME: ACETOXYSILANE

DOT HAZARD CLASSIFICATION: NONE

EMERGENCY TELEPHONE NUMBERS:

1-800-535-5053 — INFOTRAC

1-708-231-5600 — POLYGEM, INC.

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT	CAS #	PEL/TLV-TWA	STEL-TWA
Acetoxysilane	T/S	N/E	N/E

N/E - Not Established

T/S - Trade Secret

S - Skin

Listed above are the hazardous components as defined in 40 CFR 92 and 29 CFR 1910 which are present in this product and all components which appear on the Hazardous Substance List of any state.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represents approximate or typical values. They do not constitute product specifications.

BOILING RANGE: >300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5MM

EVAPORATION RATE: LESS THAN 1%

WATER MISCIBILITY: LESS THAN 01%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: >250 F

LOWER FLAMMABILITY LIMIT:

N/A

TEST METHOD: SETAFASH CLOSED CUP

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS. REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

MAY PRODUCE HAZARDOUS FUMES OR HAZARDOUS DECOMPOSITION PRODUCTS.

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

INCOMPATIBILITY: Strong oxidizers, epoxy resin, and amine mixtures especially when hot.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide and Phenolics.

CONDITIONS TO AVOID: High heat, amines, strong oxidizers acids and bases.

SECTION 6 - HEALTH HAZARD DATA**EFFECTS OF OVEREXPOSURE**

INHALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye irritation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin irritation on prolonged or repeated exposure.

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce vomiting. Seek medical attention. May cause burns to mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container.

Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection.

WASTE DISPOSAL METHOD

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA HOTLINE (1-800-424-9346)

SECTION 8 - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION**

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT

As required to prevent wetting of skin and clothing.

SECTION 9 - SPECIAL PRECAUTIONS**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE**

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

SPECIAL PRECAUTIONS

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light.

Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately.

Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION

REGULATORY INFORMATION: N/A

SARA HAZARD CLASSIFICATION: SARA Title III Regulations (40 CFR 370); N/A

SARA SECTION 313 LISTED INGREDIENTS

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

DOT PROPER SHIPPING NAME

SILICONE

UN NUMBER: N/A

This information is furnished without warranty, representation, inducement or license of any kind, except that it is accurate to the best of Polybac, Inc.'s knowledge, or obtained from sources believed by Polybac, Inc. to be accurate, and Polybac, Inc. does not assume any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct their own tests. Before using any label, read its label.

Tarr, Inc

2429 N Borthwick
PO Box 12570
Portland, Oregon 97212-0570
Phone 503-288-5294
800-422-5069
Fax 503-288-0421

July 21, 1995

ASHGROVE CEMENT CO
13939 N RIVERGATE
PORTLAND, OR 972036608

Tarr

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR
1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
(OSHA), WE ARE ENCLOSING A MATERIAL SAFETY DATA SHEET (MSDS) FOR THE
FOLLOWING:

PRODUCT CODE

ATF

Arizona
4115 W Turney Avenue
Phoenix, Arizona 85019
Phone 602-233-2000
800-350-2436
Fax 602-233-9190

Seattle
4510 B Street NW
Auburn, Washington 98001
Phone 206-859-2979
Fax 206-859-3020

Vancouver
7208 NE St Johns Road
Vancouver, Washington 98665
Phone 206-694-2521
From Portland 503-239-1566
Fax 206-737-8537

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR
EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION
REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM
TARR, INCORPORATED.

SINCERELY,

Mike Rooney

ENVIRONMENTAL AND SAFETY COORDINATOR





Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON Automatic Transmission Fluid

PRODUCT NUMBER(S): CPS226502 CPS238111
SYNONYM: DEXRON - III
MERCON

COMPANY IDENTIFICATION

Chevron USA Products Company
Environmental, Safety, and Health
Room 2900
575 Market St.
San Francisco, CA 94105-2856

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-1899
Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON Automatic Transmission Fluid

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
------------	--------	-----------	-------------

LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING
> 85.0%

HYDROTREATED DIST., HVY PARA

Chemical Name: DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
CAS64742547

5 mg/m3 (mist)	ACGIH TWA
10 mg/m3 (mist)	ACGIH STEL
5 mg/m3 (mist)	OSHA PEL

SOLVENT DEWAXED DIST., HVY PAR

Revision Number: 22	Revision Date: 05/05/95	MSDS Number: 000021
NDA - No Data Available	NA - Not Applicable	

Prepared according to the OSHA Hazard Communication Standard
(29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology
and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-005051 (06-89)

Chemical Name: DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

CAS64742650

5 mg/m3 (mist)	ACGIH TWA
10 mg/m3 (mist)	ACGIH STEL
5 mg/m3 (mist)	OSHA PEL

SOLVENT REF. DIST. LT NAPHTHEN

Chemical Name: DISTILLATES, SOLVENT-REFINED LIGHT NAPHTHENIC

CAS64741975

5 mg/m3 (mist)	ACGIH TWA
5 mg/m3 (mist)	OSHA PEL

DISTILLATES, HYDROTREATED

Chemical Name: DISTILLATES, (PETROLEUM), HYDROTREATED LIGHT PARAFFINIC

CAS64742558

5 mg/m3 (mist)	ACGIH TWA
10 mg/m3 (mist)	ACGIH STEL
5 mg/m3 (mist)	OSHA PEL

DISTILLATES, SOLVENT-DEWAXED

Chemical Name: DISTILLATES, (PETROLEUM), SOLVENT-DEWAXED LIGHT PARAFFINIC

CAS64742569

5 mg/m3 (mist)	ACGIH TWA
10 mg/m3 (mist)	ACGIH STEL
5 mg/m3 (mist)	OSHA PEL

ADDITIVES

< 15.0%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EYE:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

Revision Number: 22

Revision Date: 05/05/95

MSDS Number: 000021

NDA - No Data Available

NA - Not Applicable

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

4. FIRST AID MEASURES

EYE:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: COC 349F (176C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Alcohol Foam and Water Fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and boron. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

ACCIDENTAL RELEASE MEASURES:

Revision Number: 22

Revision Date: 05/05/95

MSDS Number: 000021

NDA - No Data Available

NA - Not Applicable

Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Exposure Controls/Personal Protection. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Red liquid.

pH:	NDA
VAPOR PRESSURE:	NA
VAPOR DENSITY	
(AIR=1):	NA
BOILING POINT:	NDA
FREEZING POINT:	NDA
MELTING POINT:	NA
SOLUBILITY:	Soluble in hydrocarbon solvents; insoluble in water.
SPECIFIC GRAVITY:	0.89 @ 15.6/15.6C
EVAPORATION RATE:	NA
VISCOSITY:	6.8 cst @ 100C (Min.)

Revision Number: 22

Revision Date: 05/05/95

MSDS Number: 000021

NDA - No Data Available

NA - Not Applicable

PERCENT VOLATILE

(VOL): NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SUBCHRONIC EFFECTS:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

Revision Number: 22 Revision Date: 05/05/95 MSDS Number: 000021
NDA - No Data Available NA - Not Applicable

This material is not expected to present any environmental problems other than those associated with oil spills.

13. DISPOSAL CONSIDERATIONS

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT
DOT HAZARD CLASS: NOT APPLICABLE
DOT IDENTIFICATION NUMBER: NOT APPLICABLE
DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	NO
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01-SARA 313	11-NJ RTK	22-TSCA Sect 5(a)(2)
02-MASS RTK	12-CERCLA 302.4	23-TSCA Sect 6
03-NTP Carcinogen	13-MN RTK	24-TSCA Sect 12(b)
04-CA Prop 65-Carcin	14-ACGIH TWA	25-TSCA Sect 8(a)
05-CA Prop 65-Repro Tox	15-ACGIH STEL	26-TSCA Sect 8(d)
06-IARC Group 1	16-ACGIH Calc TLV	27-TSCA Sect 4(a)
07-IARC Group 2A	17-OSHA PEL	28-Canadian WHMIS
08-IARC Group 2B	18-DOT Marine Pollutant	29-OSHA CEILING
09-SARA 302/304	19-Chevron TWA	30-Chevron STEL
10-PA RTK	20-EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

DISTILLATES, SOLVENT-REFINED LIGHT NAPHTHENIC

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NDA - No Data Available NA - Not Applicable

is found on lists: 02,14,17,
DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
is found on lists: 14,15,17,
DISTILLATES, (PETROLEUM), HYDROTREATED LIGHT PARAFFINIC
is found on lists: 02,14,15,17,
DISTILLATES, (PETROLEUM), SOLVENT-DEWAXED LIGHT PARAFFINIC
is found on lists: 02,14,15,17,
DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;
(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are
obtained using the guidelines or published evaluations prepared by the
National Fire Protection Association (NFPA) or the National Paint and
Coating Association (for HMIS ratings).

REVISION STATEMENT:

This revision updates Section 1 (Chemical Product and Company ID.).

The above information is based on the data of which we are aware and is
believed to be correct as of the date hereof. Since this information may
be applied under conditions beyond our control and with which we may be
unfamiliar and since data made available subsequent to the date hereof may
suggest modification of the information, we do not assume any responsibil-
ity for the results of its use. This information is furnished upon
condition that the person receiving it shall make his own determination
of the suitability of the material for his particular purpose.

Revision Number: 22 Revision Date: 05/05/95 MSDS Number: 000021
NDA - No Data Available NA - Not Applicable

Tarr, Inc

2429 N Borthwick
PO Box 12570
Portland, Oregon 97212-0570
Phone 503-288-5294
800-422-5069
Fax 503-288-0421

July 31, 1995

ASHGROVE CEMENT CO
13939 N RIVERGATE
PORTLAND, OR 972036608

Tarr

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), WE ARE ENCLOSING A MATERIAL SAFETY DATA SHEET (MSDS) FOR THE FOLLOWING:

PRODUCT CODE

D40030

Arizona

4115 W Turney Avenue
Phoenix, Arizona 85019
Phone 602-233-2000
800-350-2436
Fax 602-233-9190

Seattle

4510 B Street NW
Auburn, Washington 98001
Phone 206-859-2979
Fax 206-859-3020

Vancouver

7208 NE St Johns Road
Vancouver, Washington 98665
Phone 206-694-2521
From Portland 503-239-1566
Fax 206-737-8537

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM TARR, INCORPORATED.

SINCERELY,

Mike Rooney

ENVIRONMENTAL AND SAFETY COORDINATOR





Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON DELO 400 SAE 30

PRODUCT NUMBER(S): CPS235118 CPS238052

COMPANY IDENTIFICATION

Chevron USA Products Company
Environmental, Safety, and Health
Room 2900
575 Market St.
San Francisco, CA 94105-2856

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-1899
Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON DELO 400 SAE 30

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
LUBRICATING BASE OIL SEVERELY REFINED PETROLEUM DISTILLATE	> 80.0%	5 mg/m3 (mist) 10 mg/m3 (mist) 5 mg/m3 (mist)	ACGIH TWA ACGIH STEL OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884,
CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525,
CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES INCLUDING THE FOLLOWING
< 20.0%

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599
NDA - No Data Available NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard
(29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology
and Health Risk Assessment Unit, CRTG, P.O. Box 4054, Richmond, CA 94804

X-DDS051 (06-89)

Appendix33-001337

ZINC ALKYL DITHIOPHOSPHATE

Chemical Name: PHOSPHORODITHIOIC ACID, O,O-DI-C1-14-ALKYL ESTERS, ZINC SALT
CAS68649423 < 1.6%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
Al-5 - Appendix A Categories	() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS**EYE:**

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. Prolonged or repeated breathing of petroleum oil mist can cause respiratory irritation. This hazard evaluation is based on data from similar materials.

SIGNS AND SYMPTOMS OF EXPOSURE:

INHALATION: Respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.

4. FIRST AID MEASURES

EYE:

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NDA - No Data Available	NA - Not Applicable	

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: (COC) 419F (210C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NEPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and boron. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force. DO NOT weld, heat or drill container. Residue may

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MSDS Number: 005599

NDA - No Data Available

NA - Not Applicable

ignite with explosive violence if heated sufficiently.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

ENGINEERING CONTROLS:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Dark brown liquid.

pH: NDA

VAPOR PRESSURE: NA

VAPOR DENSITY

(AIR=1): NA

BOILING POINT: NA

FREEZING POINT: NDA

MELTING POINT: NA

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

EVAPORATION RATE: NA

VISCOSITY: 11.6 cSt @ 100C (Min.)

PERCENT VOLATILE

(VOL): NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates,

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Revision Date: 09/28/94

MSDS Number: 005599

NDA - No Data Available

NA - Not Applicable

peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

Revision Number: 3**Revision Date: 09/28/94****MSDS Number: 005599****NDA - No Data Available****NA - Not Applicable**

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Oil collection services and collection centers are available for used motor oil recycling or disposal. Some service stations, automotive service centers, and retailers provide motor oil collection facilities.

Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	NO
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory

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NDA - No Data Available	NA - Not Applicable	

lists indicated.

PHOSPHORODITHIOIC ACID,O,O-DI-CL-14-ALKYL ESTERS, ZINC SALTS

is found on lists: 01,11,

SEVERELY REFINED PETROLEUM DISTILLATE

is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This revision updates Section 3 (Hazards ID.), Section 4 (First Aid Measures), Section 8 (Exposure Controls/Personal Protection) and Section 15 (Regulatory Information).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599
NDA - No Data Available NA - Not Applicable



CALGAZ

Air Liquide America Corp.
Cambridge Plant
821 Chesapeake Drive
Cambridge, Maryland 21613 USA

Tel: (410) 228-6400 ext 103
(800) 638-1197 ext 103
Fax: (410) 228-4251

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From: Vicki Lewis, Customer Service Representative
Please deliver the following message of 3 pages to:

Name:	Howard L. Matheson
Firm:	Ash Grove Cement Co.
Fax Number:	503-289-2272
Date:	7-31-95

Regarding our earlier telephone conversation you will find our "Material Safety Data Sheet" for the following gases:

Zero Air

Thank you for your continued interest in the "Calgaz" product line.

Have a G  D day!!!

Vicki

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES
N/A

PHYSICAL DATA

BOILING POINT -317.9°F (-194.4°C)	LIQUID DENSITY AT BOILING POINT 54.70 lb/ft ³ (876.21 kg/m ³)
VAPOR PRESSURE 70°F (21.1°C) above the critical temperature of -220.4°F (-140.2°C)	GAS DENSITY AT 70°F 1 atm .0749 lb/ft ³ (1.200 kg/m ³)
SOLUBILITY IN WATER @ 68°F (20°C) Bunsen coefficient = .0183	FREEZING POINT N/A; Melt Point 2 1 Km. = -317.8°F (-194.35°C)
APPEARANCE AND ODOR Colorless, odorless gas. Specific gravity 970°F (Air = 1.0) is 1.0.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED)	AUTO-IGNITION TEMPERATURE	FLAMMABLE LIMITS % BY VOLUME
N/A	N/A	N/A
EXTINGUISHING MEDIA	ELECTRICAL CLASSIFICATION	
Nonflammable gas	Nonhazardous	
SPECIAL FIRE FIGHTING PRECAUTIONS		
N/A		
UNUSUAL FIRE AND EXPLOSION HAZARDS		
Compressed air at high pressures will accelerate the burning of materials to a greater rate than they burn at atmospheric pressure.		

REACTIVITY DATA

STABILITY	CONDITIONS TO AVOID
Unstable	
Stable	X
BIODEGRADABILITY (Structure is used)	
None	
HAZARDOUS DECOMPOSITION PRODUCTS	
None	
HAZARDOUS POLYMERIZATION	CONDITIONS TO AVOID
May Occur	
Will Not Occur	X

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
N/A
WASTE DISPOSAL METHOD
N/A

EMERGENCY RESPONSE INFORMATION
IN CASE OF EMERGENCY INVOLVING THIS MATERIAL, CALL DAY OR NIGHT (800) 231-1366
OR CALL CHEMTREC AT (800) 424-9300

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)			
N/A			
VENTILATION	LOCAL EXHAUST	N/A	SPECIAL
N/A	MECHANICAL (Fan)	N/A	OTHER
PROTECTIVE GLOVES			
Any material			
EYE PROTECTION			
Safety goggles or glasses			
OTHER PROTECTIVE EQUIPMENT			
Safety shoes			

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION	
DOT Shipping Name: Air, compressed	DOT Hazard Class: Nonflammable gas
DOT Shipping Label: Nonflammable gas	[D. No.: UN 1002
SPECIAL HANDLING RECOMMENDATIONS	
Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (53,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.	
For additional handling recommendations consult L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Association Pamphlet P-1.	
SPECIAL STORAGE RECOMMENDATIONS	
Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.	
For additional storage recommendations consult L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Association Pamphlet P-1.	
SPECIAL PACKAGING RECOMMENDATIONS	
Dry air is noncorrosive and may be used with all materials of construction. Moisture causes metal oxides which are formed with air to be hydrated so that they increase in volume and lose their protective role (rust formation). Concentrations of SO ₂ , Cl ₂ , salt, etc. in the moisture enhances the rusting of metals in air.	
OTHER RECOMMENDATIONS OR PRECAUTIONS	
Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).	

*Various Government Agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which may not be contained herein. The customer or user of this product should be familiar with these regulations.



LIQUID AIR CORPORATION
INDUSTRIAL GASES DIVISION

ADDITIONAL DATA

TRADE NAME AND SYNONYMS: (Continued)

Air; Compressed Air; Compressed Air, Breathing Quality

NOTE: Atmospheric air which is compressed is composed of the following concentrations of gases:

Gas	Molar %
Nitrogen	78.09
Oxygen	20.94
Argon	0.93
Carbon Dioxide	0.033*
Neon	18.18×10^{-4}
Helium	5.239×10^{-4}
Krypton	1.139×10^{-4}
Hydrogen	0.5×10^{-4}
Xenon	0.086×10^{-4}
Radon	6×10^{-18}
Water vapor	Varying concentrations

* Concentrations may have slight variations.

Compressed air is also produced by reconstitution using only oxygen and nitrogen. This product contains 79 molar percent nitrogen and 21 molar percent oxygen plus trace amounts of other atmospheric gases which are present in the oxygen and nitrogen.



LIQUID AIR CORPORATION
INDUSTRIAL GASES DIVISION

Material Safety Data Sheet

LIQUID AIR CORPORATION INDUSTRIAL GASES DIVISION One California Plaza, Suite 300 2100 N. California Blvd. Valencia Creek, California 94380	PRODUCT NAME Compressed Air	ONE NUMBER
	TELEPHONE (415) 977-8800 EMERGENCY RESPONSE INFORMATION ON PAGE 2	N/A
	TRADE NAME AND SYNONYMS See last page.	
	CHEMICAL NAME AND SYNONYMS Air	
DATE PREPARED OCTOBER 1, 1985 AND REVISIONS CORPORATE SAFETY DEPT.	FORMULA See note on last page.	MOLECULAR WEIGHT 28.956
		CHEMICAL FAMILY N/A

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT

None listed (ACGIH, 1984-85).

SYMPTOMS OF EXPOSURE

Air is nontoxic and necessary to support life. Inhalation of air in a high pressure environment such as underwater diving, caissons or hyperbaric chambers can result in symptoms similar to overexposure to pure oxygen. These include tingling of fingers and toes, abnormal sensations, impaired coordination and confusion. Decompression sickness pains or "bends" are possible following rapid decompression.

TOXICOLOGICAL PROPERTIES

High pressure effects (greater than two atmospheres of oxygen) are on the central nervous system. Improper decompression results in the accumulation of nitrogen in the blood.

Listed as Carcinogen or Potential Carcinogen	National Toxicology Program	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	I.A.R.C. Monographs	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	OSHA	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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RECOMMENDED FIRST AID TREATMENT

Facilities or practices at which air is breathed in a high pressure environment should be prepared to deal with illnesses associated with decompression (Bends or Caisson Disease). Decompression equipment may be required.

Information on the toxicity of substances herein for purchaser's personnel is necessarily purchaser's responsibility. Therefore, although recommendations are made herein, the purchaser must determine the toxicity of each substance for application to his personnel. Liquid Air Corporation assumes no responsibility for the accuracy or reliability of such information for application to his personnel. It is the responsibility of the purchaser to determine the toxicity of each substance for application to his personnel. It is the responsibility of the purchaser to determine the toxicity of each substance for application to his personnel. It is the responsibility of the purchaser to determine the toxicity of each substance for application to his personnel.

LAC 61107

Tarr, Inc

2429 N Borthwick
PO Box 12570
Portland, Oregon 97212-0570
Phone 503-288-5294
800-422-5069
Fax 503-288-0421

July 31, 1995

ASHGROVE CEMENT CO
13939 N RIVERGATE
PORTLAND, OR 972036608

Tarr

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR
1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
(OSHA), WE ARE ENCLOSING A MATERIAL SAFETY DATA SHEET (MSDS) FOR THE
FOLLOWING:

PRODUCT CODE

D40030

Arizona

4115 W Turney Avenue
Phoenix, Arizona 85019
Phone 602-233-2000
800-350-2435
Fax 602-233-9190

Seattle

4510 B Street NW
Auburn, Washington 98001
Phone 206-859-2979
Fax 206-859-3020

Vancouver

7208 NE St Johns Road
Vancouver, Washington 98665
Phone 206-694-2521
From Portland 503-239-1566
Fax 206-737-8537

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR
EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION
REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM
TARR, INCORPORATED.

SINCERELY,

Mike Rooney
ENVIRONMENTAL AND SAFETY COORDINATOR





Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON DELO 400 SAE 30

PRODUCT NUMBER(S): CPS235118 CPS238052

COMPANY IDENTIFICATION

Chevron USA Products Company
Environmental, Safety, and Health
Room 2900
575 Market St.
San Francisco, CA 94105-2856

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-1899
Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON DELO 400 SAE 30

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
LUBRICATING BASE OIL			
SEVERELY REFINED PETROLEUM DISTILLATE			
	> 80.0%	5 mg/m3 (mist)	ACGIH TWA
		10 mg/m3 (mist)	ACGIH STEL
		5 mg/m3 (mist)	OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES INCLUDING THE FOLLOWING
< 20.0%

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599
NDA - No Data Available NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard
(29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology
and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-005051 (06-89)

ZINC ALKYL DITHIOPHOSPHATE

Chemical Name: PHOSPHORODITHIOIC ACID, O,O-DI-C1-14-ALKYL ESTERS, ZINC SALT
CAS68649423 < 1.6%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS**EYE:**

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. Prolonged or repeated breathing of petroleum oil mist can cause respiratory irritation. This hazard evaluation is based on data from similar materials.

SIGNS AND SYMPTOMS OF EXPOSURE:

INHALATION: Respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.

4. FIRST AID MEASURES

EYE:

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NDA - No Data Available	NA - Not Applicable	

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: (COC) 419F (210C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and boron. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force. DO NOT weld, heat or drill container. Residue may

Revision Number: 3

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MSDS Number: 005599

NDA - No Data Available

NA - Not Applicable

ignite with explosive violence if heated sufficiently.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

ENGINEERING CONTROLS:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Dark brown liquid.

pH: NDA

VAPOR PRESSURE: NA

VAPOR DENSITY

(AIR=1): NA

BOILING POINT: NA

FREEZING POINT: NDA

MELTING POINT: NA

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

EVAPORATION RATE: NA

VISCOSITY: 11.6 cSt @ 100C (Min.)

PERCENT VOLATILE

(VOL): NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates,

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MSDS Number: 005599

NDA - No Data Available

NA - Not Applicable

peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

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MSDS Number: 005599

NDA - No Data Available

NA - Not Applicable

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Oil collection services and collection centers are available for used motor oil recycling or disposal. Some service stations, automotive service centers, and retailers provide motor oil collection facilities.

Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	NO
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06-IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07-IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08-IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory

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NDA - No Data Available	NA - Not Applicable	

lists indicated.

PHOSPHORODITHIOIC ACID, O,O-DI-C1-14-ALKYL ESTERS, ZINC SALTS

is found on lists: 01,11,

SEVERELY REFINED PETROLEUM DISTILLATE

is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;
(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are
obtained using the guidelines or published evaluations prepared by the
National Fire Protection Association (NFPA) or the National Paint and
Coating Association (for HMIS ratings).

REVISION STATEMENT:

This revision updates Section 3 (Hazards ID.), Section 4 (First Aid
Measures), Section 8 (Exposure Controls/Personal Protection) and
Section 15 (Regulatory Information).

The above information is based on the data of which we are aware and is
believed to be correct as of the date hereof. Since this information may
be applied under conditions beyond our control and with which we may be
unfamiliar and since data made available subsequent to the date hereof may
suggest modification of the information, we do not assume any responsibil-
ity for the results of its use. This information is furnished upon
condition that the person receiving it shall make his own determination
of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599
NDA - No Data Available NA - Not Applicable

**CALGAZ**

Air Liquide America Corp.
Cambridge Plant
821 Chesapeake Drive
Cambridge, Maryland 21613 USA

Tel: (410) 228-6400 ext 103
(800) 638-1197 ext 103
Fax: (410) 228-4251

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From: Vicki Lewis, Customer Service Representative
Please deliver the following message of 3 pages to:

Name:	Howard L. Matheson
Firm:	Ash Grove Cement Co.
Fax Number:	503-289-2272
Date:	7-31-95

Regarding our earlier telephone conversation you will find our "Material Safety Data Sheet" for the following gases:

Zero Air

Thank you for your continued interest in the "Calgaz" product line.

Have a G  D day!!!

Vicki

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES

N/A

PHYSICAL DATA

BOILING POINT -317.9°F (-194.4°C)	LIQUID DENSITY AT BOILING POINT 54.70 lb/ft ³ (876.21 kg/m ³)
VAPOR PRESSURE @ 70°F (21.1°C) above the critical temperature of -220.4°F (-140.2°C)	GAS DENSITY AT 70°F 1 atm .0749 lb/ft ³ (1.200 kg/m ³)
SOLUBILITY IN WATER @ 68°F (20°C) Bunsen coefficient = .0183	FREEZING POINT N/A; Bubble Point @ 1 Atm. = -317.8°F (-194.35°C)
APPEARANCE AND ODOR Colorless, odorless gas. Specific gravity 970°F (Air = 1.0) is 1.0.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) N/A	AUTO IGNITION TEMPERATURE N/A	FLAMMABLE LIMITS % BY VOLUME N/A
EXTINGUISHING MEDIA Nonflammable gas		ELECTRICAL CLASSIFICATION Nonhazardous
SPECIAL FIRE FIGHTING PROCEDURES N/A		
UNUSUAL FIRE AND EXPLOSION HAZARDS Compressed air at high pressures will accelerate the burning of materials to a greater rate than they burn at atmospheric pressure.		

REACTIVITY DATA

STABILITY (Unstable)		CONDITIONS TO AVOID
Stable	X	
INCOMPATIBILITY (GASES OR LIQUIDS)		
None		
HAZARDOUS DECOMPOSITION PRODUCTS		
None		
HAZARDOUS POLYMERIZATION May Occur		CONDITIONS TO AVOID
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED N/A
WASTE DISPOSAL METHOD N/A

EMERGENCY RESPONSE INFORMATION

IN CASE OF EMERGENCY INVOLVING THIS MATERIAL, CALL DAY OR NIGHT (800) 231-1366
OR CALL CHEMTREC AT (800) 424-9300

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)			
N/A			
VENTILATION	LOCAL EXHAUST	N/A	SPECIAL
N/A	MECHANICAL (See)	N/A	OTHER
PROTECTIVE GLOVES Any material			
EYE PROTECTION Safety goggles or glasses			
OTHER PROTECTIVE EQUIPMENT Safety shoes			

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION DOT Shipping Name: Air, compressed DOT Hazard Class: Nonflammable gas DOT Shipping Label: Nonflammable gas C.D. No.: UN 1002	
SPECIAL HANDLING RECOMMENDATIONS Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. For additional handling recommendations consult L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Association Pamphlet P-1.	
SPECIAL STORAGE RECOMMENDATIONS Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. For additional storage recommendations consult L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Association Pamphlet P-1.	
SPECIAL PACKAGING RECOMMENDATIONS Dry air is noncorrosive and may be used with all materials of construction. Moisture causes metal oxides which are formed with air to be hydrated so that they increase in volume and lose their protective role (rust formation). Concentrations of SO ₂ , Cl ₂ , salt, etc. in the moisture enhances the rusting of metals in air.	
OTHER RECOMMENDATIONS OR PRECAUTIONS Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).	

*Various Government Agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which may not be contained herein. The customer user of this product should be familiar with these regulations.



ADDITIONAL DATA

TRADE NAME AND SYNONYMS: (Continued)

Air; Compressed Air; Compressed Air, Breathing Quality

NOTE: Atmospheric air which is compressed is composed of the following concentrations of gases:

Gas	Molar %
Nitrogen	78.09
Oxygen	20.94
Argon	0.93
Carbon Dioxide	0.033*
Neon	18.18×10^{-4}
Helium	5.239×10^{-4}
Krypton	1.139×10^{-4}
Hydrogen	0.5×10^{-4}
Xenon	0.086×10^{-4}
Radon	6×10^{-18}
Water vapor	Varying concentrations

* Concentrations may have slight variations.

Compressed air is also produced by reconstitution using only oxygen and nitrogen. This product contains 79 molar percent nitrogen and 21 molar percent oxygen plus trace amounts of other atmospheric gases which are present in the oxygen and nitrogen.



Material Safety Data Sheet

LIQUID AIR CORPORATION INDUSTRIAL GASES DIVISION One California Plaza, Suite 150 2021 N. California Blvd. Walnut Creek, California 94598	PRODUCT NAME Compressed Air	CAS NUMBER N/A
	TELEPHONE (415) 977-6500 EMERGENCY RESPONSE INFORMATION ON PAGE 2	
ISSUE DATE OCTOBER 1, 1989 AND REVISIONS CORPORATE SAFETY DEPT.	TRADE NAME AND SYNONYMS See last page.	CHEMICAL FAMILY N/A
	CHEMICAL NAME AND SYNONYMS Air	
FORMULA See note on last page.		MOLECULAR WEIGHT 28.966

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT

None listed (ACGIH, 1984-85).

SYMPTOMS OF EXPOSURE

Air is nontoxic and necessary to support life. Inhalation of air in a high pressure environment such as underwater diving, caissons or hyperbaric chambers can result in symptoms similar to overexposure to pure oxygen. These include tingling of fingers and toes, abnormal sensations, impaired coordination and confusion. Decompression sickness pains or "bends" are possible following rapid decompression.

TOXICOLOGICAL PROPERTIES

High pressure effects (greater than two atmospheres of oxygen) are on the central nervous system. Improper decompression results in the accumulation of nitrogen in the blood.

Listed as Carcinogen or Potential Carcinogen	National Toxicology Program	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	I.A.R.C. Monographs	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	OSHA	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	-----------------------------	--	---------------------	--	------	--

RECOMMENDED BY FIRST AID TREATMENT

Facilities or practices at which air is breathed in a high pressure environment should be prepared to deal with illnesses associated with decompression (Bends or Caisson Disease). Decompression equipment may be required.

Judgments as to the suitability of information herein for purchase is made solely by purchaser's responsibility. Therefore, all information herein is for informational purposes only. Liquid Air Corporation does not warrant, endorse, or assume any responsibility as to the accuracy or suitability of such information for application to purchase or use of any product or consequence of failure. Since Liquid Air Corporation has no control over the use of this product, it assumes no liability for damage or loss of product resulting from improper use or application of the product. Data Sheets may be changed from time to time. Be sure to consult the latest edition.

LAC0512E

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203
503-286-1677 • FAX: 289-2272

VENDOR: 00046900

ATTN ORDER DEPARTMENT
APOLLO CHEMICAL & EQUIPMENT
6647 NE 47TH AVE.
PORTLAND OR 97218

PURCHASE ORDER NO.

89510227

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date Issued	7/28/95
Date Required	8/11/95
Terms	NET 30 DAYS
Via	VENDORS TRUCK
Freight Terms	FOB: DESTINATION

This order is ☐ a confirmation ☒ not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	✓ 15	GAL	STEAM CLEANER SOAP, * M.S.D.S. REQUIRED * Supplier #: SC-575 ** ORIGINAL ORDER ** (Per P/S # 44675 8/14/95)	APOLLO 05-10-900		00-00-0420-0008	97 50

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

Howard E. Black Jr.

JH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203
503-286-1677 • FAX: 289-2272

VENDOR: 00712920

ATTN ORDER DESK
POLYGEM INCORPORATED
P. O. BOX 509
WEST CHICAGO, IL 60185-0609

PURCHASE ORDER NO.

89510242

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date Issued	7/28/95
Date Required	8/11/95
Terms	NET 30
Via	U. P. S.
Freight Terms	PRE-PAY & ADD

This order is ☐ a confirmation ☒ not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	✓ 48	EACH	SILICONE ADHESIVE SEALANT (CLEAR), POLYBAC (CARTRIDGE = 10.3 fl. oz.) Supplier #: POLYBAC # 500 CLEAR * M.S.D.S. REQUIRED * ** ORIGINAL ORDER ** (Per Inv # 21169 8/14/95)	05-10-302 OEM: 500		00-00-0420-0008	3.75

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

Donna L. Blanton

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203
503-286-1677 • FAX: 289-2272

VENDOR: 00712920

ATTN KATHY
POLYDEM INCORPORATED
P. O. BOX 609
WEST CHICAGO, IL 60186-0609

PURCHASE ORDER NO.

89510268

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date Issued	8/15/95
Date Required	8/29/95
Terms	NET 30
Via	U.P.S.
Freight Terms	PRE-PAY & ADD

This order is ☐ a confirmation ☒ not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	/ 48	EACH	HIGH TEMP. SILICONE SEALANT(RED), POLYBAC (CARTRIDGE = 10.3 fl. oz.) Supplier #: POLYBAC #500 RED ** ORIGINAL ORDER ** (Per Inv # 21273 8/23/95)	05-10-310 OEM: RED SILICONE		00-00-0420-0008	6.00

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

Handwritten signature: Howard A. Macken

Material Safety Data Sheet for Lawn Lime

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Lawn Lime

Chemical Family: Primarily a mixture of calcium carbonate and calcium hydroxide and many contain a minor amount of calcium oxide.

Revision Date: August, 1995

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
		Total dust, 15 mg/m ³ Respirable fraction, 5 mg/m ³ **	10 mg/m ³ *
Calcium carbonate, CaCO ₃	1317-65-3		
Calcium hydroxide, Ca(OH) ₂	1305-62-0	5 mg/m ³	5 mg/m ³
Calcium oxide, CaO	1305-78-8	5 mg/m ³	2 mg/m ³
*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica			
**Unless contains >1% crystalline silica (quartz)			

Lawn Lime can contain quartz >0.1%. The OSHA PEL for quartz is $\frac{10\text{mg/m}^3}{\% \text{SiO}_2 + 2}$ respirable dust only.

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m³.

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base
Specific Gravity:	Approximate range 2.3 to 2.60
Vapor Pressure(mm Hg):	0
Vapor Density:	(Air=1) NA
Evaporation Rate:	NA
Solubility in Water:	0.0014% (25°C)
Appearance and Odor:	Soft white powder or granules; faint odor
Melting Point:	Calcium hydroxide-decomposes above 600°C Calcium carbonate-decomposes above 900°C

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Lawn Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Lawn Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Lawn Lime can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

1. **Inhalation: corrosive**
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough are common.

Section V - Health Hazard Data - (Continued)

- c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.
- 2. **Skin contact:** corrosive
 - a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: A NIOSH-MSHA approved respirator with dust filtering capability must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

National Sanitary Supply Co.
P.O. Box 61126
Los Angeles, Ca 90061
(213) 770-1970

5/24/94
2813 TOTONCHY, TALAL

193150

ASH GROVE CEMENT WEST, INC.
13939 N RIVERGATE BLVD
PO BOX 03007
PORTLAND OR 97203

Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal OSHA Hazard Communication Final Standard 29 CFR 1910.1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnesses in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias
Executive Administration

Material Safety Data Sheet

May be used to Comply with
 OSHA's Hazard Communication Standard 29 CFR 1910.
 Standard must be consulted for specific requirements

U.S. Department of Labor
 Occupational Safety and Health Administration
 (Non-Mandatory Form) Form Approved OMB No. 1218-0072

Identity (As Used On Label and List)

5283	Water Soluble Super Industrial Cleaner and Degreaser	NOTE: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
------	--	---

Section I--	Name	(Address, Street, City, State, & Zip Code)	HAZARD RATING
Sun Energy Products P. O. Box 9926 Fort Lauderdale, FL 33310	Emergency Telephone Number	(305) 484-5300	HEALTH 2
	Telephone Number for Information	(305) 484-5300	FLAMMABILITY 0
	Date Prepared		REACTIVITY
	Revised: 9/7/95		Protective Equipment:
			Goggles, Gloves

Section II--Hazardous Ingredients / Identity Information

Hazardous Components (Specify Chemical Identity, Common Name)	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Propylene Glycol T-Butyl Ether CAS#67018-52-7	Not Est.	Not Est.	N/A	
Methanol CAS#67-50-1 Subject to the reporting requirements of Sec. 313 of SARA Title III of 40 CFR 372.	200 ppm	200 ppm	250 ppm (STEL)	3
Sodium Metasilicate CAS #6834-92-0	15 mg/m3	15 mg/m3	N/A	
Nonylphenol + 9EO Polyethoxylate CAS#8018-45-9	Not Est.	Not Est.	N/A	

Section III--Physical Chemical Characteristics

Boiling Point	212°F	Specific Gravity (WATER = 1)	1.028
Vapor Pressure	ND	Melting Point	N/A
Vapor Density	ND	Evaporation Rate	ND
Solubility in Water	Infinit		
Appearance and Odor	Clear pink liquid with mild citrus odor		

Section IV--Fire and Explosion Hazard Data

Flash Point	Flammable Limits	LEL	UEL
>200°F (T.C.C.)		N/A	N/A
Extinguishing Media	Water spray, carbon dioxide, foam or dry chemical		

Special Fire Fighting Procedures
 Use self-contained breathing apparatus when fighting fires.

Unusual Fire and Explosion Hazards

None

Section V--Reactivity Data

5283

/ Water Soluble Super

Page 2

Stability	Unstable	Conditions to Avoid
	Stable	Extremes in temperature
	X	

Incompatibility (Materials to Avoid)	Avoid contact with strong oxidizing agents
--------------------------------------	--

Hazardous Decomposition or Byproducts	Burning can produce carbon monoxide and/or carbon dioxide.
---------------------------------------	--

Hazardous Polymerization	May Occur	Conditions to Avoid	None
	Will Not Occur	X	

Section VI--Health Hazard Data

Route(s) of Entry:	Inhalation?	Yes	Skin?	Yes	Ingestion?	Yes
--------------------	-------------	-----	-------	-----	------------	-----

Health Hazards (Acute and Chronic)

Acute: can cause eye and skin irritation. May cause headache, nausea, vomiting and dizziness.
 Chronic: None known.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	No	No	No



SCIENTIFIC INSTRUMENTS
LABORATORY APPARATUS
EQUIPMENT, CHEMICALS
GLASSWARE

Nurnberg Scientific

DIVISION OF NURNBERG THERMOMETER CO. INC.

6310 S. W. VIRGINIA AVE.
PORTLAND, OREGON 97201
Telephone (503) 246-8297
FAX 503-246-0360

TELECOPIER TRANSMITTAL COVER SHEET

DATE: September 29, 1995 TIME: 3⁵⁰ pmRECEIVING FAX NUMBER: (503) 289-2272

ORIGINATING FAX NUMBER (503) 246-0360

DELIVER TO: Howard
c/o Ashgrove Cement West, Inc.SENT BY: Kathy

NUMBER OF PAGES TO FOLLOW: _____

SPECIAL INSTRUCTIONS: Here are the MSDS sheets you
requested

PLEASE CALL (503) 246-8297 IF YOU HAVE ANY QUESTIONS ABOUT THIS TRANSMISSION.

ASK FOR: Kathy

Material Safety Data Sheet

Red Bird Service
203 Western Ave. Osgood, IN 47037
Phone 800-428-3502 OR FOR EMERGENCY
Call Chemtrec 24-hours a day...800-421-9300

Product: SODIUM HYDROXIDE 2.00
Internal ID: 8-406
MSDS No: RGS / 8-406
Revision: 2
Date: July 3, 1992

Red Bird Service
203 Western Ave. Osgood, IN 47037
Phone 800-428-3502 OR FOR EMERGENCY
Call Chemtrec 24-hours a day...800-421-9300

Product: SODIUM HYDROXIDE 2.00
Internal ID: 8-406
MSDS No: RGS / 8-406
Revision: 2
Date: July 3, 1992

National Paint and Coatings Association	HEALTH HAZARD	2 - Moderate
Hazardous Material Identification System	FLAMMABILITY HAZARD	0 - Minimal
	REACTIVITY HAZARD	0 - Minimal
	PERSONAL PROTECTION	C - Goggles, Gloves, Apron

SECTION I. MATERIAL IDENTIFICATION

Trade/chemical Name: SODIUM HYDROXIDE 2.00 NORMAL SOLUTION
Description: Standardized Solution of Sodium Hydroxide in water.
Other Designations: Caustic Soda, Soda Lye, NaOH
Manufacturer: Red Bird Service

SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name: Sodium Hydroxide
CAS Number: 1310-73-2
Percent: 8
Exposure Limits:
Ceiling Limit: 5 mg/m³
TLV: 10 mg/m³
Information found relating to normal routes of exposure:
Irritation data:
Skin, Rabbit: 50 mg/24H Severe. Eye, Rabbit: 50 mg/24H Severe.

Water
This chemical is TSCA Reference.
7732-18-5 Balance

SECTION III. PHYSICAL DATA

Appearance & Odor: A clear, colorless liquid with no odor.
Boiling point: ca 116 °C
Vapor pressure: 14 (water)
Water solubility (g): Complete
Vapor density (air=1): 0.7 (water)
Evaporation rate: Much less than
volatile by volume: 91

Page 1 ---

MSDS 2-190 continues on page 2

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Material Safety Data Sheet

Product: SODIUM HYDROXIDE 2.00
Internal ID: 8-406
MSDS No: RGS / 8-406
Revision: 2
Date: July 3, 1992

Red Bird Service
203 Western Ave. Osgood, IN 47037
Phone 800-428-3502 OR FOR EMERGENCY
Call Chemtrec 24-hours a day...800-421-9300

SPECIAL PROTECTION INFORMATION continued from page 3

Respirator: Use filter-type respirator for mist and dust protection where needed.

Workplace considerations:

Ventilation: Provide adequate ventilation to meet TLV requirements, especially where dusting or misting conditions can exist.

Safety stations:

Emergency equipment and safety showers must be available in nearby work area.

Contaminated equipment:

Laundry any contaminated clothing before reuse.

SECTION III. SPECIAL PRECAUTIONS

Storage segregation: Store in well-sealed containers. Avoid handling conditions that may lead to spills and leaks, or to formation of mist or dust.

Special handling / storage: Whenever this material is stored, unloaded, handled or used, abundant water (preferably running water) should be available for emergency use. During for storage or use areas for this material should have retention basins for pH adjustment and dilution of spills and flushings before discharge.

Engineering controls: Workers should not be permitted to handle this material without proper training or to work with it without protective equipment.

Shipping Name: Sodium Hydroxide Solution

DOT Class: Corrosive Material
Data source code(s): H, Xn1, Sx1, WPPA, RGS (rev.)
UN Register: UN-1824

Prepared/Reviewed by: Gene C. Keith

July 3, 1992

Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Red Bird Service extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for the consequences of its use.

Page 4 ---

End of MSDS 2-406

--- Page 4

Red Bird Service
205 Western Ave. Osgood, IN 47037
Phone 888-424-3362 OR FOR EMERGENCY,
Call Chemtrec 24-hours a day...800-424-9366
MSDS No: RBS / S-400
Revision: 2
Date: July 9, 1992

Product: SODIUM HYDROXIDE 2.00
Internal ID: S-400
MSDS No: RBS / S-400
Revision: 2
Date: July 9, 1992

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): None - not combustible Limits: LEL: N/A UEL: N/A
NFPA Fire Hazard Symbol Codes: Flammability: 0 Health: 1 Reactivity: 0 Special: 0
Extinguishing Media: Use that which is appropriate for surrounding fire. Water spray may be used to cool containers.

Stable fire or explosion hazards: Although this material is nonflammable, it may be dangerous in a fire.
Special fire-fighting procedures: This solution can react with certain metals, such as aluminum, to generate flammable hydrogen gas.
(See also Reactivity Data, Section V)

SECTION V. REACTIVITY DATA

Material is stable under ordinary conditions of storage and use. Hazardous polymerization cannot occur
Chemical incompatibilities: Under the proper conditions of temperature and pressure, it can react with acetic acid, acetaldehyde and metals.
Conditions to avoid: Avoid contact with leather and wool and with aluminum, tin, zinc.

Hazardous decomposition products: No hazardous decomposition products.

SECTION VI. HEALTH HAZARD INFORMATION

This product is not considered a carcinogen

Summary of risks: Sodium hydroxide is a strong alkali and is dangerous when (as is handled) it can be destructive to all human tissue if contacts, producing severe burns. Eye contact can produce severe or permanent injury. Dust or mist inhalation can injure the entire respiratory tract. Ingestion can cause severe damage to mucous membranes and other tissue if contacts. Prolonged contact with dilute solutions can have a destructive effect upon tissue.

Medical conditions which may be aggravated by contact: Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of this substance.

Red Bird Service
205 Western Ave. Osgood, IN 47037
Phone 888-424-3362 OR FOR EMERGENCY,
Call Chemtrec 24-hours a day...800-424-9366
MSDS No: RBS / S-400
Revision: 2
Date: July 9, 1992

Product: SODIUM HYDROXIDE 2.00
Internal ID: S-400
MSDS No: RBS / S-400
Revision: 2
Date: July 9, 1992

HEALTH HAZARD INFORMATION continued from page 2

First aid:

Eye contact: Wash eyes immediately with plenty of running water for no less than 15 minutes, including under the eyelids and all surfaces. Speed in rinsing out the eyes with water after contact is extremely important if permanent injury is to be avoided. Contact physician as soon as possible. Contact rapidly causes severe damage to the delicate tissue.

Skin contact: Wash contact area promptly with large quantities of water. Dilute acetic acid, vinegar, can be used to neutralize. Remove contaminated clothing immediately. Wash skin with soap and water. Call physician for further info. (See comments for further info.)

Inhalation: Remove from exposure to mist or dust and get prompt medical help.

Ingestion: Immediately dilute chemical by drinking large amounts of water or milk, then neutralize with dilute vinegar or fruit juice. Vomiting may occur spontaneously, but do not induce it. Contact a physician promptly. Never give anything by mouth to an unconscious person.

Physician should see all cases other than minor exposures to small areas of skin. Contact lenses pose a special hazard. Soft lenses absorb and all lenses concentrate irritants.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Flush contaminated surfaces with water and neutralize with dilute acid, preferably acetic acid, to remove final traces. (Sodium bicarbonate may also be used to partially neutralize.) Finally, rinse with water.

Waste management / Disposal: Disposal of waste is greatly dependent on local conditions and regulations. Personnel should be trained to handle local and technical requirements. Waste chemical should never be deliberately discharged directly into sewers or surface waters. (First, convert to neutral salts and dilute well with water.) Follow all State, Federal and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Per: protective equipment:

Goggles: Use chemical safety goggles. A plastic face shield can also be used.
Gloves: Use rubber gloves, rubber apron or protective clothing, rubber boots when needed to prevent contact with sodium hydroxide, especially when solutions are used.

Material Safety Data Sheet

Red Bird Service
205 Western Ave. Osgood, IN 47037
Phone 800-428-3502 OR FOR EMERGENCY,
Call Chemtrec 24-hours a day...800-424-9300

Product: SODIUM HYDROXIDE 0.25
NORMAL

Internal ID: S-455

MSDS No: RBS / S-455

Revision: 2

Date: July 9, 1992

National Paint
and Coatings
Association

Hazardous Material
Identification
System

HEALTH HAZARD	2 - Moderate
FLAMMABILITY HAZARD	0 - Minimal
REACTIVITY HAZARD	1 - Slight
PERSONAL PROTECTION	C - Glasses, gloves, Apron

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: SODIUM HYDROXIDE 0.25 NORMAL

Description: A standardized solution of Sodium Hydroxide.

Other Designations: Caustic Soda, Soda Lye, NaOH

Manufacturer: Red Bird Service

SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Sodium Hydroxide	1310-73-2	1.00	<u>Ceiling Limit</u> 2 mg/m ³ - No LD50 information found relating to normal routes of exposure. Irritation data: Skin, Rabbit: 50 mg/24H Severe. Eye, Rabbit: 50 mg/24H Severe.

Water 7732-18-5 Balance

This chemical is TSCA Reference.

SECTION III. PHYSICAL DATA

Appearance & Odor: A clear, colorless liquid with no odor.

Boiling point: 100 °C
Vapor pressure: 14 (Water)
Water solubility (%): Complete
Vapor density (air=1): 0.7 (water)

Evaporation rate: BuAc = 1:
Greater than 1
% volatile by volume: 99

Material Safety Data Sheet

Red Bird Service
205 Western Ave. Osgood, IN 47037
Phone 800-428-3502 OR FOR EMERGENCY,
Call Chemtrec 24-hours a day...800-424-9300

Product: SODIUM HYDROXIDE 0.25
NORMAL
Internal ID: S-455
MSDS No: RBS / S-455
Revision: 2
Date: July 9, 1992

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): None - not
combustible

Limits: LEL %: N/A

UEL %: N/A

NFPA Fire Hazard Symbol Codes: Flammability: 0 Health: 2 Reactivity: 1 Special: 0

Extinguishing Media: Although it is not combustible, it can be hazardous if present in a fire area. Autoignition Temp: N/A

Unusual fire or explosion hazards: This solution can react with certain metals, such as aluminum, to produce flammable hydrogen gas.

Special fire-fighting procedures: Firefighters should wear self-contained breathing apparatus and full protective clothing when this material is involved in a fire.

SECTION V. REACTIVITY DATA

Material is stable under ordinary conditions of storage and use. Hazardous polymerization cannot occur

Chemical incompatibilities: Slowly it can pick up moisture from the air and react with carbon dioxide from the air to form sodium carbonate.

Conditions to avoid: Avoid contact with leather and wool and with aluminum, tin, zinc, and alloys which contain these metals.

Hazardous decomposition Products: No hazardous decomposition products.

SECTION VI. HEALTH HAZARD INFORMATION

This product is not considered a carcinogen

Summary of risks: This solution can be dangerous when improperly handled. It can be destructive to all human tissue it contacts producing burns. Eye contact can cause irritation and with greater exposure, severe burns with possible permanent injury or blindness. Dust or mist inhalation can injure the entire respiratory tract, ranging from mild to serious damage. Skin contact can cause irritation or burns. Ingestion may cause burns of mouth, throat and stomach.

Medical conditions which may be aggravated by contact: Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of this substance.

First aid:

Eye contact: Wash eyes immediately with plenty of running water for no less than 30 minutes, including under the eyelids and all surfaces. Speed in rinsing out the eyes with water after contact is extremely important if permanent injury is to be avoided. Contact physician as soon as possible.

Material Safety Data Sheet

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NORMAL
Internal ID: S-455
MSDS No: RBS / S-455
Revision: 2
Date: July 9, 1992

HEALTH HAZARD INFORMATION continued from page 2.

Skin contact: Wash contact area promptly with large quantities of water for 30-minutes.

Inhalation: Remove from exposure to mist and get medical help.

Ingestion: Immediately dilute chemical by drinking large amounts of water or milk. Vomiting may occur spontaneously, but do not induce it. Contact a physician promptly. Never give anything by mouth to an unconscious person.

Physician should see all cases other than minor exposures to small areas of skin.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Flush contaminated surfaces with water and neutralize with dilute acid, preferably acetic acid, to remove final traces. (Sodium bicarbonate may also be used to partially neutralize.) Finally, rinse with water.

Waste management / Disposal: Disposal of waste is greatly dependent on local conditions and requirements. Pre-emergency plans should be made to meet legal and technical requirements. Waste caustic should never be deliberately discharged directly into sewers or surface waters. (First, convert to neutral salts and dilute well with water.) Follow all state, federal and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Use chemical safety goggles! A plastic face shield can also be used.

Gloves: Use rubber gloves, rubber apron or protective clothing when solutions are used.

Respirator: Use filter-type respirator for mist and dust protection where needed.

Workplace considerations:

Ventilation: Provide adequate ventilation to meet TLV requirements, especially where dusting or misting conditions can exist.

Safety stations:

Eye wash fountains and safety showers should be available in nearby work area.

Contaminated equipment:

Laundry any clothing before reuse.

Contact lenses pose a special health hazard; Soft lenses absorb and all lenses concentrate irritants.

Material Safety Data Sheet

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NORMAL
Internal ID: S-455
MSDS No: RBS / S-455
Revision: 2
Date: July 9, 1992

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Store in well-sealed containers. Avoid handling conditions that may lead to spills and leaks, or to formation of mist or dust.

DOT Class: Not Regulated
Data source code(s): N, Mall, CFR, RBS(rev.)

Prepared/revised by: Gene C. Feith
July 9, 1992

Judgements as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Red Bird Service extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for the consequences of its use.

Material Safety Data Sheet

Red Bird Service
205 Western Ave. Osgood, IN 47037
Phone 800-428-3502 OR FOR EMERGENCY,
Call Chemtrec 24-hours a day...800-424-9300

Product: HYDROCHLORIC ACID
0.500 NORMAL
Internal ID: H-180

MSDS No: RBS / H-180
Revision: 4
Date: September 8, 1993

National Paint
and Coatings
Association

Hazardous Material
Identification
System

HEALTH HAZARD	1 - Slight
FLAMMABILITY HAZARD	0 - Minimal
REACTIVITY HAZARD	0 - Minimal
PERSONAL PROTECTION	SEE SECTION 8

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: HYDROCHLORIC ACID 0.500 NORMAL

Description: A standardized solution of Hydrochloric Acid.

Other Designations: Hydrochloric Acid N/2

Cautions: Hydrochloric acid is highly corrosive and causes serious skin and eye burns as well as acute and chronic respiratory problems.

Manufacturer: Red Bird Service

SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Hydrochloric acid * (***)	7647-01-0	4.2	1991 OSHA PEL Ceiling: 5 ppm (7 mg/m ³) 1991-92 ACGIH TLV Ceiling: 5 ppm (7.5 mg/m ³) 1990 NIOSH REL Ceiling: 5 ppm (7 mg/m ³) 1990 DFG (Germany) MAK Ceiling: 5 ppm (7 mg/m ³) Category 1: local irritants Peak Exposure Limit: 10 ppm, 5 min momentary value/8 per shift 1985-86 Toxicity Data** Human, inhalation, LCLo: 1300 ppm/30 min; toxic effects not yet reviewed Rabbit, oral, LD50: 900 mg/kg; toxic effects not yet reviewed Rat, inhalation,
Water	7732-18-5	Balance	

Material Safety Data Sheet

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INGREDIENTS AND HAZARDS continued from page 1

TCLo: 450 mg/m3/1
hr (1 day prior to
pregnancy) produced
fetotoxicity (except
death) & specific
developmental
abnormalities
(homeostasis).
Rabbit, eye: 100 mg
rinse caused mild
irritation.
1990 IDLH Level
100 ppm

* Trace impurities include ammonia, arsenic, iron, sulfate, free Cl-, and heavy metals.

** See NIOSH, RTECS (MW4025000), for additional irritation, reproductive, and toxicity data.

*** This chemical is subject to section 313 reporting.

This chemical is TSCA Referenced.

SECTION III. PHYSICAL DATA

Appearance & Odor: Colorless liquid that fumes in air and has a strong pungent odor.
Can be slightly yellow from traces of iron, chlorine, or organic matter.

Boiling point: ca 100°C
Vapor pressure: 14 like water
Water solubility (%): Complete
Vapor density (air=1): 0.7 like water

Evaporation rate: BuAC=1:
Greater than 1
% volatile by volume: 100

Odor Threshold: 0.1 to 5 ppm

Other Solubilities: Soluble in alcohol, benzene, and ether; insoluble in hydrocarbons.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): Noncombustible Limits: LEL %: None reported* UEL %: None reported*

NFPA Fire Hazard Symbol Codes: flammability: 0 health: 0 Reactivity: 0 Special:

Extinguishing Media: Use extinguishing agents suitable for surrounding fire. Autoignition Temp: None reported

Unusual fire or explosion hazards: * Extreme heat or contact with many metals liberates hydrogen gas which has explosion limits of 4 to 75%.

Material Safety Data Sheet

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0.500 NORMAL
Internal ID: H-180

MSDS No: RBS / H-180
Revision: 4
Date: September 8, 1993

FIRE AND EXPLOSION DATA continued from page 2

Special fire-fighting procedures: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Structural firefighter's protective clothing is ineffective for fires involving hydrochloric acid. Stay away from ends of tanks. Cool tanks with water spray until well after fire is out. Do not release runoff from fire control methods to sewers or waterways.

SECTION V. REACTIVITY DATA

Material is stable Hazardous polymerization will not occur

Chemical incompatibilities: Polymerizes on contact with aldehydes or epoxides; attacks most metals (except mercury, silver, gold, platinum, tantalum, and some alloys), some plastics, rubber, and coatings; reacts explosively with alcohols + hydrogen cyanide, potassium permanganate, tetraselenium tetranitride; ignites on contact with fluorine, hexalithium disilicide, metal acetylides or carbides (cesium acetylide, rubidium acetylide); and is incompatible with acetic anhydride, 2-amino ethanol, ammonium hydroxide, calcium phosphide, chlorosulfonic acid, 1, 1-difluoroethylene, and ethylene diamine. Continued in Comments.

Conditions to avoid: Avoid contact with incompatibles.

Hazardous decomposition Products: Thermal oxidative decomposition of HCl can produce toxic chloride fumes and explosive hydrogen gas.

* Incompatibilities, continued: Hydrochloric acid is incompatible with ethylene imine, oleum, perchloric acid, S-propiolactone, propylene oxide, sodium hydroxide, silver perchlorate + carbon tetrachloride, sulfuric acid, uranium phosphide, acetate, calcium carbide, magnesium bromide, mercuric sulfate, and chlorine + dinitroaniline.

SECTION VI. HEALTH HAZARD INFORMATION

This product is not considered a carcinogen

Summary of risks: HCl is a highly corrosive liquid and depending on concentration and duration of exposure, symptoms range from irritation to ulcerations and permanent injury. This is a dilute solution of Hydrochloric Acid.

Acute effects: Inhalation of vapors or mists may be corrosive to the respiratory tract and can cause tracheal and bronchial epithelium necrosis (tissue death), cough, choking, ulceration. Liquid aspiration can cause pulmonary edema, lung collapse, emphysema and damage to the pulmonary blood vessels. Skin contact with HCl solutions may cause burns and ulcerations. Permanent eye damage may result from splashes. Ingestion is unlikely but if it occurs, symptoms include gray tongue color, corrosion of mucous membranes, esophagus, and stomach, nausea, vomiting, intense thirst, diarrhea, difficulty swallowing, circulatory collapse and possible death.

Chronic effect(s): Repeated or prolonged exposure can cause dermatitis, conjunctivitis, gastritis, photosensitization, tooth erosion, and repeated exposure to mists from heated-metal pickling solutions can cause nose and gum bleeds, ulceration of oral or nasal mucosa, and "renders facial skin so tender that shaving is painful." (133)

Material Safety Data Sheet

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0.500 NORMAL
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HEALTH HAZARD INFORMATION continued from page 3

First aid:

Eye contact: Do not allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.

Skin contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. Treat skin with a 5% triethanolamine solution. For reddened or blistered skin, consult a physician.

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have that conscious and alert person drink 1 to 2 glasses of water to dilute. Do not induce vomiting!

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Consider a chest x-ray in acute overexposure. Gastric lavage with 5% sodium bicarbonate may be helpful.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Neutralize spills with crushed limestone, soda ash, lime, or sodium bicarbonate. After neutralizing, take up small spills with earth, sand, vermiculite, or other absorbent, noncombustible material and place in suitable containers for disposal; flush large spills to containment area and reclaim (if possible) or await disposal. Follow applicable OSHA regulations (29 CFR 1910.120).

Waste management / Disposal: Neutralize to between 5.5 & 8.5 before disposal. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

OSHA Designations

Listed as an Air Contaminant (29 CFR 1910.1000, Table Z-1-A)

EPA Designations

Listed as a RCRA Hazardous Waste (40 CFR 261.23, 0.01N solution or higher): No.

D002, Characteristic of corrosivity

Listed as a CERCLA Hazardous Substance* (40 CFR 302.4): Final Reportable Quantity (RQ), 5000 lb (2270 kg) [* per CWA, Sec. 311 (b)(4)]

SARA Extremely Hazardous Substance (40 CFR 355), TPQ: Not listed

Listed as a SARA Toxic Chemical (40 CFR 372.65)

Environmental Transport: In soil, HCl will infiltrate moving faster in the presence of moisture. It may dissolve some soil matter, particularly those of a carbonate base will be neutralized to some degree and will be transported to groundwater.

Ecotoxicity Values: Chronic plant toxicity = 100 ppm; injurious to irrigatable crops at 350 mg/L; trout, LC100, 10 mg/L/24 hr shrimp, LC50, 100 to 330 ppm/starfish, LC50, 100 to 330 mg/L/48 hr; shore crab, LC50, 240 mg/L/48 hr.

Material Safety Data Sheet

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0.500 NORMAL
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Revision: 4
Date: September 8, 1993

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Wear chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Because contact lens use in industry is controversial, establish your own policy.

Respirator: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. For < 50 ppm, use a cartridge respirator with acid gas cartridges, or any supplied-air respirator (SAR) or SCBA. For < 100 ppm, use any chemical cartridge respirator with a full facepiece and cartridge that protects against HCl inhalation, or any SAR or SCBA with a full facepiece.*

Other: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent skin contact. Polycarbonate, butyl rubber, polyvinyl chloride, and chlorinated polyethylene are recommended materials for PPE. Polyvinyl alcohol is not recommended.

Workplace considerations:

Ventilation: Provide general and local exhaust ventilation systems to maintain airborne concentrations below the OSHA PEL (Sec. 2). Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source.(103)

Safety stations:

Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.

Contaminated equipment:

Separate contaminated work clothes from street clothes. Launder contaminated work clothing before wearing. Remove this material from your shoes and clean personal protective equipment.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

* Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Prevent physical damage to containers. Store in a cool, dry, well-ventilated area on a cement floor away from direct sunlight and heat sources. Use decanting pumps or pouring frames to minimize spillage during loading and unloading operations.

Engineering controls: To reduce potential health hazards, use sufficient dilution or local exhaust ventilation to control airborne contaminants and to maintain concentrations at the lowest practical level. HCl should be manufactured in closed systems. Pay close attention to leak detection. Aqueous scrubbers are used to control

Material Safety Data Sheet

Red Bird Service
205 Western Ave. Osgood, IN 47037
Phone 800-428-3502 OR FOR EMERGENCY,
Call Chemtrac 24-hours a day...800-424-9300

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0.500 NORMAL
Internal ID: H-180

MSDS No: RES / H-180
Revision: 4
Date: September 8, 1993

SPECIAL PRECAUTIONS continued from page 5

hydrogen chloride emissions from vent stacks and other sources. Workers shouldn't enter tanks previously containing HCl until they have been cleaned.

Other precautions: Administrative Controls: Consider preplacement and periodic medical exams of exposed workers with emphasis on the eyes, skin, and respiratory tract. Pulmonary function tests (FEV, FVC) are useful in determining lung disorders. Conduct difficult operations in fume hoods.

DOT Class: Not Regulated

Data source code(s): 26, 73, 89, 100, 101, 103, 124, 126, 127, 132, 133, 136, 139,
148, 149, 153, 159, 162, 163, 164, 167, 168, 171, 174, CFR,
RBS(rev.)

Prepared/revised by: Gene C. Feith

September 8, 1993

Judgements as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Red Bird Service extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for the consequences of its use.

Vendor:

170520 CYCLONAIRE PNEUMATIC BULK
CONVEYING COMPANY
P. O. BOX 39
YORK, NE 68467

Remit:

SAME

Terms: NET ON RECEIPT
Contact: JERRY ELFRING
Phone: 402-362-2000

Messages: LOCATION: 2922 N. DIVISION ST.
FED.EX.#: 1051-1752-3

YORK, NE 68467

Material Safety Data Sheet

for

Calcium Carbonate

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Substance: Calcium Carbonate, Calcite, CaCO_3 , Ground Limestone, Ash Grove Grid Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: CaCO_3

Revision Date: September, 1995

Section II - Hazardous Ingredients/Identity Information

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 TLV</u>
Calcium Carbonate (CaCO_3)	471-34-1	>1%	15 mg/m ³ total dust 5 mg/m ³ respirable dust	10 mg/m ³ **
Silica (quartz)	14808-60-7	>0.1%	$\frac{10 \text{ mg/m}^3}{\% \text{ Silica}^* + 2}$	0.1 mg/m ³ +

* Respirable fraction

** For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain silica as an impurity.

Section III - Physical/Chemical Characteristics

Boiling Point: NA* **Specific Gravity:** 2.710

Vapor Pressure(mm Hg): 0 **Melting Point:** Decomposes 900°C

Vapor Density: (Air=1) NA **Evaporation Rate:** NA

Solubility in Water: 0.0014% (25°C)

Appearance and Odor: White powder or granules; no odor

*NA = Not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA
Flammable or Explosive Limits: NA **LEL:** NA **UEL:** NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA
Firefighting Media: NA
Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids.
Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Chronic exposure to silica above accepted exposure limits can lead to silicosis.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing lung diseases such as emphysema or tuberculosis may be aggravated by exposure.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the National Toxicology Program (NTP) and the International Agency for Research in Cancer (IARC) have determined, primarily through animal studies, that silica has the potential to cause cancer. OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respirator: In dusty environments, the use of a MSHA/NIOSH approved respirator for particulates is recommended.

Firefighting: NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet for Calcium Hydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium hydroxide, calcium dihydroxide, $\text{Ca}(\text{OH})_2$, slaked lime, hydrated lime, lime, milk of lime, carboxide, caustic lime

Trade Name and Synonyms: Snowflake, Kemilime, Slik
CAS No. 001-305-620

Date Reviewed: September, 1995

Section II - Hazardous Ingredients

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 TLV</u>
Calcium Hydroxide [$\text{Ca}(\text{OH})_2$]	001-305-620	>1%	15 mg/m ³ total dust 5 mg/m ³ respirable dust	5 mg/m ³
Silica (quartz)	14808-60-7	>0.1%	<u>10 mg/m³</u> % Silica* + 2	0.1 mg/m ³ *

* Respirable fraction

Section II - Hazardous Ingredients

Chemical Family: Inorganic Base

Molecular Weight: 74.10

Boiling Point: Decomposes to calcium oxide above 580°C

Melting Point: (-H₂O) at 580°C; converts to calcium oxide

Vapor Pressure (mm Hg): N/A

Specific Gravity: 2.24

Vapor Density: (Air=1) 0 **Evaporation Rate:** N/A

Solubility in Water: 0.185 g/100 ml at 0°C
0.077 g/100 ml at 100°C

Appearance and Odor: Soft white powder; odorless

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: NA; UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Calcium hydroxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough are common.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact:** corrosive
 - a. **Acute exposure:** Lime in contact with unprotected skin can produce severe burns. Because of the solubility of lime, further penetration is possible and it may continue for several days. The extent of damage depends on duration of contact.

Section V - Health Hazard Data - (Continued)

- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Calcium hydroxide listed as an OSHA carcinogen: NO By NTP: YES By IARC: NO

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.49, with water at temperatures of 25°C or above.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: A NIOSH-MSHA approved respirator with dust filtering capability for protection against airborne calcium hydroxide

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Steps to be taken in case material is Released or Spilled: Pick up spilled powder. Avoid contact and dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet for Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900
Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime, unslaked lime

Trade Name and Synonyms: Pebble Quicklime, Cal-Max

CAS No. 1305-78-8

Date Revised: August, 1995

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Quicklime, CaO	1305-78-8	5 mg/m ³	2 mg/m ³
Quartz, free silica	14808-60-7	PEL = $\frac{10\text{mg/m}^3}{\% \text{SiO}_2^{*+2}}$	0.1 mg/m ³

Calcium oxide may contain 0.4% to 3% quartz, free silica. Chronic exposure to the respirable dust of materials containing quartz; e.g., sand and gravel, has caused silicosis.

*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family:	Inorganic Base	Evaporation Rate: N/A
Molecular Weight:	56.10	
Boiling Point:	5162°C	
Melting Point:	4737°F.	
Specific Gravity:	3.2-3.4	
Vapor Density:	(Air=1) N/A	
Solubility in Water:	0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C	
Appearance and Odor:	White granular or powder; faint earthy odor	

Section IV - Fire and Explosion Hazard Data

Flash Point: NA; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: NA **LEL:** NA **UEL:** NA

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. **Warning:** Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. **CAUTION:** Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. **Inhalation: corrosive**
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough are common.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact: corrosive**
 - a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact: corrosive**
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion: corrosive.** If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25°C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use NIOSH-MSHA approved respirator with dust filtering capability for protection against airborne particles.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet for AB3 Limestone

Section I - Identity

Manufacturer's name and address: Shamrock Aggregates
23004 E. 24 Highway
Independence, MO 64050

Emergency Telephone Number: (816) 792-1628
Information Telephone Number: (816) 329-8993

Substance: AB3 Limestone, Calcium Carbonate, Calcite, CaCO_3 , Limestone, Lime Rock, Road Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: CaCO_3

Revision Date: September, 1995

Section II - Hazardous Ingredients

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 TLV</u>
Calcium Carbonate (CaCO_3)	471-34-1	>1%	15 mg/m ³ total dust 5 mg/m ³ respirable dust	10 mg/m ³ **
Silica (quartz)	14808-60-7	>0.1%	<u>10 mg/m³</u> % Silica* + 2	0.1 mg/m ³ *

* Respirable fraction

** For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain silica as an impurity.

Section III - Physical/Chemical Characteristics

Boiling Point: NA* **Specific Gravity:** 2.710
Vapor Pressure(mmHg): 0 **Melting Point:** Decomposes 900°C.
Vapor Density: (Air=1) NA **Evaporation Rate:** 0 (1652°F)
Solubility in Water: 0.0014% (25°C)
Appearance and Odor: White powder or granules; No odor

*NA = not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA
Flammable Limits: NA LEL: NA UEL: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA
Firefighting Media: NA
Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids.
Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Chronic exposure to silica above accepted exposure limits can lead to silicosis.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing lung diseases such as emphysema or tuberculosis may be aggravated by exposure.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the National Toxicology Program (NTP) and the International Agency for Research in Cancer (IARC) have determined, primarily through animal studies, that silica has the potential to cause cancer. OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Emergency measures not generally indicated.

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulate.

Respirator: In dusty environments, the use of a MSHA/NIOSH approved respirator with dust filtering capability is recommended.

Firefighting: NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Concentrate Chemicals

MATERIAL SAFETY DATA SHEET
3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand SANITIZER (Ready-to-Use)
ISSUED: April 10, 1995
SUPERSEDES: April 04, 1995
DOCUMENT: 06-6876-4

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER.....	7732-18-5	> 99
DIDECYLDIMETHYLAMMONIUM CHLORIDE.....	7173-51-5	< 0.1
ALKYLDIMETHYLBENZYL AMMONIUM CHLORIDE...	8001-54-5	< 0.1

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT:..... 212 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... 1 Water=1
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1 Water=1
PERCENT VOLATILE:..... ca. 99 %
VOLATILE ORGANIC COMPOUNDS:..... < 1 %
VOC LESS H2O & EXEMPT SOLVENTS: < 1 %
pH:..... ca. 7
VISCOSITY:..... < 100 centipoise
MELTING POINT:..... N/A

APPEARANCE AND ODOR:
Liquid, clear; essentially colorless.

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... N/A
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... N/A
AUTOIGNITION TEMPERATURE:..... N/A

EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER (Ready-to-Use)
April 10, 1995

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3. FIRE AND EXPLOSION HAZARD DATA (continued)

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Not applicable.

NFPA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Not applicable.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Observe precautions from other sections. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.

RECOMMENDED DISPOSAL:
Discharge spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Dispose of empty cans in a sanitary landfill.

ENVIRONMENTAL DATA:
A 3M Product Environmental Data Sheet (PED) is available.

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: No CHRONIC: No

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER CONCENTRATE
September 15, 1995

PAGE 3

5. ENVIRONMENTAL INFORMATION (continued)

Empty containers may be sanitary landfilled.

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

EPCRA HAZARD CLASS:
FIRE HAZARD: Yes PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact.

** When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, eye contact with the concentrate is not expected to occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER CONCENTRATE
September 15, 1995

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7. PRECAUTIONARY INFORMATION (continued)

SKIN PROTECTION:
Avoid prolonged or repeated skin contact.

** When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, skin contact with the concentrate is not expected to occur.

RECOMMENDED VENTILATION:
Use in a well-ventilated area. Use with adequate dilution ventilation.

** When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, special ventilation is not required.

RESPIRATORY PROTECTION:
Avoid prolonged breathing of vapors. Avoid prolonged breathing of spray or mists.

** When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, respiratory protection is not required.

PREVENTION OF ACCIDENTAL INGESTION:
Do not ingest.

RECOMMENDED STORAGE:
Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed. Keep away from heat, sparks, open flame, and other sources of ignition. Combustible liquid and vapor.

OTHER PRECAUTIONARY INFORMATION:
Not intended for consumer sale or use.

This product is not intended to be used without prior dilution as specified on the label.

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	
1-PROPOXY-2-PROPANOL.....	NONE	NONE	NONE	NONE	
STYRENE MALEIC ANHYDRIDE RESIN					
AMMONIUM SALT.....	NONE	NONE	NONE	NONE	
Fluoroaliphatic acid salt (N.J. trade secret registry 04499600-5170P).....	NONE	NONE	NONE	NONE	

Abbreviations: N/D - Not Determined N/A - Not Applicable

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact with vapor, spray, or mist. Wear safety glasses with side shields.

SKIN PROTECTION:
Avoid skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber, neoprene, nitrile rubber.

RECOMMENDED VENTILATION:
Use in a well-ventilated area. Use with adequate dilution ventilation.

RESPIRATORY PROTECTION:
Avoid breathing of vapors, mists or spray.

PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating.

RECOMMENDED STORAGE:
Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY DATA SHEET

3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand DEODORIZER CONCENTRATE: COUNTRY GARDEN
3M ID NUMBER/U.P.C.:
70-0706-3514-2 00-48011-20119-6
ISSUED: June 21, 1995
SUPERSEDES: February 13, 1995
DOCUMENT: 06-8477-9

1. INGREDIENT	C.A.S. NO.	PERCENT
POLYALKOXY ALCOHOLS.....	69013-18-9	30 - 60
FRAGRANCE.....	Unknown	10 - 30
WATER.....	7732-18-5	10 - 30
EMULSIFIER.....	9005-64-5	10 - 30
1-METHOXY-2-PROPANOL.....	107-98-2	1 - 5

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT:..... ca. 212 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... N/D
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1 Water=1
PERCENT VOLATILE:..... ca. 50 %
VOLATILE ORGANIC COMPOUNDS:.... ca. 25 %
VOC LESS H2O & EXEMPT SOLVENTS: N/D
pH:..... 6 - 7
VISCOSITY:..... < 100 centipoise
MELTING POINT:..... N/A

APPEARANCE AND ODOR:
Liquid, clear; dark red color; strong floral fragrance

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... > 212 F TCC
FLAMMABLE LIMITS - LEL:..... N/D
FLAMMABLE LIMITS - UEL:..... N/D
AUTOIGNITION TEMPERATURE:..... N/D

Abbreviations: N/D - Not Determined N/A - Not Applicable

7. PRECAUTIONARY INFORMATION (continued)

EXPOSURE LIMITS					
INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	
CARBOXYIMIDAZOLINIUM SALT.....	NONE	NONE	NONE	NONE	
FRAGRANCE.....	NONE	NONE	NONE	NONE	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Mild Eye Irritation: signs/symptoms can include redness, swelling, pain, and tearing.

SKIN CONTACT:
Mild Skin Irritation (after prolonged or repeated contact): signs/symptoms can include redness, swelling, and itching.

INHALATION:
Single overexposure, above recommended guidelines, may cause:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Ingestion may cause:

Gastrointestinal Effects: signs/symptoms generally will include abdominal pain.

OTHER HEALTH HAZARD INFORMATION:
HMIS: HEALTH=0 /FLAMMABILITY=0 /REACTIVITY=0 /PERSONAL PROTECTION=B

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER CONCENTRATE: COUNTRY GARDEN
June 21, 1995

3. FIRE AND EXPLOSION HAZARD DATA (continued)

EXTINGUISHING MEDIA:
Water, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
No unusual fire or explosion hazards are anticipated.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 1 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Strong Oxidizing Agents.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide, Irritant Vapors or Gases.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.

RECOMMENDED DISPOSAL:
Small quantities (less than 5 gal.(19 L)) may be discharged to a wastewater treatment system. Incinerate in a permitted hazardous waste incinerator. Dispose of completely absorbed waste product in a hazardous waste facility.

Abbreviations: N/D - Not Determined N/A - Not Applicable

5. ENVIRONMENTAL INFORMATION (continued)

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: No CHRONIC: No

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
Wash affected area with soap and water.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:
Not applicable.

RESPIRATORY PROTECTION:
Avoid prolonged breathing of spray or mists.

PREVENTION OF ACCIDENTAL INGESTION:
Do not ingest.

RECOMMENDED STORAGE:
Keep container closed when not in use. Keep out of the reach of children.

Abbreviations: N/D - Not Determined N/A - Not Applicable

8. HEALTH HAZARD DATA

EYE CONTACT:
Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

SKIN CONTACT:
Lung Inflammation: Product contains surfactants which have been shown in animal studies to cause lung inflammation resulting from prolonged skin contact. Signs/symptoms can include coughing and shortness of breath.

Moderate Skin Irritation: signs/symptoms can include redness, swelling, itching, and dryness.

May be absorbed through the skin in harmful amounts.

INHALATION:
Single overexposure, above recommended guidelines, may cause:

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Ingestion may cause:

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

OTHER HEALTH HAZARD INFORMATION:
HMIS: HEALTH=1 /FLAMMABILITY=1 /REACTIVITY=0 /PERSONAL PROTECTION=B

SECTION CHANGE DATES

INGREDIENTS SECTION CHANGED SINCE February 13, 1995 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

7. PRECAUTIONARY INFORMATION (continued)

FIRE AND EXPLOSION AVOIDANCE:
Not applicable.

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	
POLYALKOXY ALCOHOLS.....	NONE	NONE	NONE	NONE	
FRAGRANCE.....	NONE	NONE	NONE	NONE	
EMULSIFIER.....	NONE	NONE	NONE	NONE	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Mild Eye Irritation: signs/symptoms can include redness, swelling, pain, and tearing.

SKIN CONTACT:
No adverse health effects are expected from skin contact.

INHALATION:
No adverse health effects are expected from inhalation exposure.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

No adverse health effects are expected from swallowing.

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

5. ENVIRONMENTAL INFORMATION (continued)

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: No CHRONIC: No

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
Wash affected area with soap and water.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:
Not applicable.

RESPIRATORY PROTECTION:
Avoid prolonged breathing of spray or mists.

PREVENTION OF ACCIDENTAL INGESTION:
Do not ingest.

RECOMMENDED STORAGE:
Keep container closed when not in use. Keep out of the reach of children.

Abbreviations: N/D - Not Determined N/A - Not Applicable

7. PRECAUTIONARY INFORMATION (continued)

FIRE AND EXPLOSION AVOIDANCE:
Not applicable.

Table with 6 columns: INGREDIENT, VALUE, UNIT, TYPE, AUTH, SKIN*. Rows include WATER, POLYALKOXY ALCOHOLS, FRAGRANCE, and EMULSIFIER.

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Mild Eye Irritation: signs/symptoms can include redness, swelling, pain, and tearing.

SKIN CONTACT:
Contact with the skin during product use is not expected to result in significant irritation.

INHALATION:
No adverse health effects are expected from inhalation exposure.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

5. ENVIRONMENTAL INFORMATION (continued)

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: No

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact. Wear vented goggles.

** When used as directed, eye contact with this material is not expected to occur.

SKIN PROTECTION:
Avoid skin contact.

** When used as directed, skin contact with this material is not expected to occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

7. PRECAUTIONARY INFORMATION (continued)

RECOMMENDED VENTILATION:
Use in a well-ventilated area.

** When used as directed, no special ventilation is required.

RESPIRATORY PROTECTION:
Avoid breathing of vapors, mists or spray.

** When used as directed, respiratory protection is not required.

PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating.

RECOMMENDED STORAGE:
Store away from heat. Keep container in well-ventilated area.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed.

OTHER PRECAUTIONARY INFORMATION:
** NOTE: This material is intended to be diluted only with the 3M Twist 'N Fill Chemical Dispenser.

Table with 6 columns: INGREDIENT, VALUE, UNIT, TYPE, AUTH, SKIN*. Rows include POLYALKOXY ALCOHOLS, FRAGRANCE, WATER, and EMULSIFIER.

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

MATERIAL SAFETY DATA SHEET

3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE
3M ID NUMBER/U.P.C.:
70-0706-3515-9 00-48011-20120-2
ISSUED: February 13, 1995
SUPERSEDES: November 15, 1994
DOCUMENT: 06-8476-1

1. INGREDIENT	C.A.S. NO.	PERCENT
POLYALKOXY ALCOHOLS.....	69013-18-9	30 - 60
FRAGRANCE.....	TradeSecret	10 - 30
WATER.....	7732-18-5	10 - 30
EMULSIFIER.....	9005-64-5	10 - 30
1-METHOXY-2-PROPANOL.....	107-98-2	1 - 5

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT:..... ca. 212 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... N/D
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1 Water=1
PERCENT VOLATILE:..... ca. 50 %
VOLATILE ORGANIC COMPOUNDS:..... ca. 25 %
VOC LESS H2O & EXEMPT SOLVENTS: N/D
pH:..... 6 - 7
VISCOSITY:..... < 100 centipoise
MELTING POINT:..... N/A

APPEARANCE AND ODOR:
Liquid, clear; dark green color; strong spicy fragrance

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... > 212 F TCC
FLAMMABLE LIMITS - LEL:..... N/D
FLAMMABLE LIMITS - UEL:..... N/D
AUTOIGNITION TEMPERATURE:..... N/D

Abbreviations: N/D - Not Determined N/A - Not Applicable

3. FIRE AND EXPLOSION HAZARD DATA (continued)

EXTINGUISHING MEDIA:
Water, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
No unusual fire or explosion hazards are anticipated.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 1 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Strong Oxidizing Agents.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide, Irritant Vapors or Gases.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.

RECOMMENDED DISPOSAL:
Small quantities (less than 5 gal.(19 L)) may be discharged to a wastewater treatment system. Incinerate in a permitted hazardous waste incinerator. Dispose of completely absorbed waste product in a hazardous waste facility.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY DATA SHEET
3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand DEODORIZER (Ready-to-Use): COUNTRY GARDEN
ISSUED: June 21, 1995
SUPERSEDES: November 15, 1994
DOCUMENT: 06-8480-3

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER	7732-18-5	> 95
POLYALKOXY ALCOHOLS	69013-18-9	< 1
FRAGRANCE	Unknown	< 1
EMULSIFIER	9005-64-5	< 1

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIBS WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT: 212 F
VAPOR PRESSURE: N/D
VAPOR DENSITY: N/D
EVAPORATION RATE: 1 Water=1
SOLUBILITY IN WATER: complete
SPECIFIC GRAVITY: ca. 1 Water=1
PERCENT VOLATILE: ca. 99 %
VOLATILE ORGANIC COMPOUNDS: < 1 %
VOC LESS H2O & EXEMPT SOLVENTS: < 1 %
pH: ca. 7
VISCOSITY: < 100 centipoise
MELTING POINT: N/A

APPEARANCE AND ODOR:
Liquid, clear; red color; light floral fragrance.

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A
FLAMMABLE LIMITS - LEL: N/A
FLAMMABLE LIMITS - UEL: N/A
AUTOIGNITION TEMPERATURE: N/A

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER (Ready-to-Use): COUNTRY GARDEN
June 21, 1995

PAGE 2

3. FIRE AND EXPLOSION HAZARD DATA (continued)

EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSTION HAZARDS:
Not applicable.

NFPA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Not applicable.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Collect spilled material. Clean up residue.

RECOMMENDED DISPOSAL:
Flush spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Dispose of waste product in a sanitary landfill.

ENVIRONMENTAL DATA:
Not determined.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE
February 13, 1995

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8. HEALTH HAZARD DATA

EYE CONTACT:
Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

SKIN CONTACT:
Lung Inflammation: Product contains surfactants which have been shown in animal studies to cause lung inflammation resulting from prolonged skin contact. Signs/symptoms can include coughing and shortness of breath.

Moderate Skin Irritation: signs/symptoms can include redness, swelling, itching, and dryness.

May be absorbed through the skin in harmful amounts.

INHALATION:
Single overexposure, above recommended guidelines, may cause:
Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Ingestion may cause:
Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

SECTION CHANGE DATES

HEADING SECTION CHANGED SINCE November 15, 1994 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

MATERIAL SAFETY DATA SHEET
3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand BONNET CLEANER (Ready-to-Use)
3M ID NUMBER:
ISSUED: November 15, 1994
SUPERSEDES: INITIAL ISSUE
DOCUMENT: 06-8483-7

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER.....	7732-18-5	> 95
1-PROPOXY-2-PROPANOL.....	1569-01-3	< 1

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT:..... ca. 212 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... N/D
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1 Water=1
PERCENT VOLATILE:..... > 99 %
VOLATILE ORGANIC COMPOUNDS:..... < 10 gms/liter
VOC LESS H2O & EXEMPT SOLVENTS: < 10 gms/liter
pH:..... ca. 8
VISCOSITY:..... < 100 centipoise
Melting point:..... N/A

APPEARANCE AND ODOR:
Liquid, colorless; pleasant fragrance

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... > 200 F
FLAMMABLE LIMITS - LEL:..... N/D
FLAMMABLE LIMITS - UEL:..... N/D
AUTOIGNITION TEMPERATURE:..... N/D

EXTINGUISHING MEDIA:
Water, Carbon dioxide, Dry powder, Foam

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER (Ready-to-Use)
November 15, 1994

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3. FIRE AND EXPLOSION HAZARD DATA (continued)

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Not applicable.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 1 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Strong Oxidizing Agents.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Contain spill. Flush area thoroughly with water as necessary to dilute or clean up residue. Collect spilled material. Clean up residue with water.

RECOMMENDED DISPOSAL:
Small quantities (less than 5 gal.(19 L)) may be discharged to a wastewater treatment system.

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

EPCRA HAZARD CLASS:

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE
June 20, 1995

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5. ENVIRONMENTAL INFORMATION (continued)

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact. Avoid eye contact with vapor, spray, or mist. Wear safety glasses with side shields.

** When used as directed, eye contact with this material is not expected to occur.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber, neoprene, nitrile rubber

** When used as directed, skin contact with this material is not expected to occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE
June 20, 1995

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7. PRECAUTIONARY INFORMATION (continued)

RECOMMENDED VENTILATION:
Use in a well-ventilated area. Use with adequate dilution ventilation.

** When used as directed, no special ventilation is required.

RESPIRATORY PROTECTION:
Avoid breathing of vapors, mists or spray.

** When used as directed, respiratory protection is not required.

PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating. Do not ingest.

RECOMMENDED STORAGE:
Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed.

OTHER PRECAUTIONARY INFORMATION:
** This material is intended to be diluted only with the 3M Twist 'N Fill Chemical Dispenser.

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	NONE
CARBOXYIMIDAZOLINIUM SALT.....	NONE	NONE	NONE	NONE	NONE
FRAGRANCE.....	NONE	NONE	NONE	NONE	NONE

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Severe Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, cloudy appearance of the cornea, impaired vision and possible permanently impaired vision.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY 3M
DATA SHEET 3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand SANITIZER CONCENTRATE
3M ID NUMBER/U.P.C.:
70-0705-8178-3 00-48011-19869-4 70-0706-3507-6 00-48011-20112-7
70-0706-3508-4 00-48011-20113-4
ISSUED: September 13, 1995
SUPERSEDES: August 31, 1995
DOCUMENT: 06-6875-6

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER.....	7732-18-5	> 90
DIDECYLDIMETHYLAMMONIUM CHLORIDE.....	7173-51-5	2.3
ALKYLDIMETHYLBENZYL AMMONIUM CHLORIDE...	8001-54-5	1.5

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24
HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT:..... ca. 212 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... ca. 1 Water=1
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1.0 Water=1
PERCENT VOLATILE:..... ca. 95 %
VOLATILE ORGANIC COMPOUNDS:..... < 1 %
VOC LESS H2O & EXEMPT SOLVENTS: N/A
pH:..... ca. 7
VISCOSITY:..... < 100 centipoise
MELTING POINT:..... N/A

APPEARANCE AND ODOR:
Liquid, clear, colorless to light amber color; mild odor.

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... N/A
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... N/A
AUTOIGNITION TEMPERATURE:..... N/D

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER CONCENTRATE
September 13, 1995

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3. FIRE AND EXPLOSION HAZARD DATA (continued)

EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Not applicable.

NFPA HAZARD CODES: HEALTH: 2 FIRE: 0 REACTIVITY: 0
UNUSUAL REACTION HAZARD: corrosive

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide, Oxides of Nitrogen.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding
physical and health hazards, respiratory protection, ventilation, and
personal protective equipment. In the U.S.A., call (612) 733-1110 or
(612) 733-6100 for 24-hour spill assistance. Ventilate area. Cover
with inorganic absorbent material. Collect spilled material. Clean
up residue with water. Place in a polyethylene-lined metal
container. Seal the container.

RECOMMENDED DISPOSAL:
Incinerate in a permitted hazardous waste incinerator in the presence
of a combustible material. Combustion products will include HCl.

ENVIRONMENTAL DATA:
A 3M Product Environmental Data Sheet (PED) is available.

Abbreviations: N/D - Not Determined N/A - Not Applicable

7. PRECAUTIONARY INFORMATION (continued)					
specified on the label.					
EXPOSURE LIMITS					
INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	
DIDECYLDIMETHYLAMMONIUM CHLORIDE.....	NONE	NONE	NONE	NONE	
ALKYLDIMETHYLBENZYL AMMONIUM CHLORIDE.....	NONE	NONE	NONE	NONE	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Chemical Related Eye Burns (chemical corrosivity): signs/symptoms can include cloudy appearance of the cornea, chemical burns, pain, tearing, ulcers, impaired vision or loss of vision.

SKIN CONTACT:
Allergic Skin Reaction: signs/symptoms can include redness, swelling, blistering, and itching.

Skin Burns (chemical corrosivity): signs/symptoms can include redness, swelling, itching, pain, blistering, ulceration, sloughing, and scar formation.

May be absorbed through the skin and produce effects similiar to those caused by inhalation and/or ingestion.

INHALATION:
Single overexposure, above recommended guidelines, may cause:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Harmful or fatal if swallowed.

Abbreviations: N/D - Not Determined N/A - Not Applicable

8. HEALTH HAZARD DATA (continued)	
Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.	
OTHER HEALTH HAZARD INFORMATION: HMIS: HEALTH=3 /FLAMMABILITY=0 /REACTIVITY=0 / PERSONAL PROTECTION=D	
SECTION CHANGE DATES	

ENVIRONMENTAL INFO. SECTION CHANGED SINCE August 31, 1995 - ISSUE
HEALTH HAZARD DATA SECTION CHANGED SINCE August 31, 1995 - ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.



Twist 'n Fill™
Cleaning Chemical
Management System

Material Safety Data Sheets



Home and Commercial Care Division
3M Center Building 223-3N-05
St. Paul, MN 55144-1000

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78-8091-2929-5

October 1995
SUPPLEMENT

MSDS: 3M Brand SANITIZER CONCENTRATE
September 13, 1995

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5. ENVIRONMENTAL INFORMATION (continued)

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = D002 (Corrosive)

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT:
Immediately flush skin with large amounts of water for at least 15 minutes in a chemical safety shower while removing contaminated clothing and shoes. Get immediate medical attention. Wash contaminated clothing before reuse.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
If swallowed, do NOT induce vomiting. Give victim two glasses of water. Call a physician immediately. Never give anything by mouth to an unconscious person.

Note to physician: Probable mucosal damage may contraindicate the use of gastric lavage.

OTHER FIRST AID INFORMATION:
Measures against circulatory shock, respiratory depression, and convulsion may be needed.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact. The following should be worn alone or in combination, as appropriate, to prevent eye contact: Wear vented goggles. Wear full-face shield.

** When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, eye contact with the concentrate is not expected to occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER CONCENTRATE
September 13, 1995

PAGE 4

7. PRECAUTIONARY INFORMATION (continued)

FILL (tm) Chemical Dispenser, eye contact with the concentrate is not expected to occur.

SKIN PROTECTION:
Avoid skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber, neoprene, nitrile rubber. Use one or more of the following personal protection items as necessary to prevent skin contact: apron, coveralls

** When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, skin contact with the concentrate is not expected to occur.

RECOMMENDED VENTILATION:
Use in a well-ventilated area. Provide sufficient ventilation to maintain emissions below recommended exposure limits. If exhaust ventilation is not adequate, use appropriate respiratory protection.

** When used as directed and diluted and dispenses with a TWIST 'N FILL (tm) Chemical Dispenser, special ventilation is not required.

RESPIRATORY PROTECTION:
Avoid breathing of vapors, mists or spray. Avoid breathing of airborne material.

** When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, respiratory protection is not required.

PREVENTION OF ACCIDENTAL INGESTION:
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

Avoid contamination of food.

RECOMMENDED STORAGE:
Store away from areas where product may come into contact with food or pharmaceuticals. Do not store containers on their sides. Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed. Keep away from heat, sparks, open flame, and other sources of ignition. Combustible liquid and vapor.

OTHER PRECAUTIONARY INFORMATION:
Not intended for consumer sale or use.

Avoid creasing or impacting container side walls.

This product is not intended to be used without prior dilution as

Abbreviations: N/D - Not Determined N/A - Not Applicable

TABLE OF CONTENTS

READY-TO-USE CHEMICALS

- 3M Brand Bonnet Cleaner (Ready-to-Use)
- 3M Brand Deodorizer (Ready-To-Use):Country Garden
- 3M Brand Deodorizer (Ready-to-Use): Fresh Scent
- 3M Brand Deodorizer (Ready-to-Use): Mountain Spice
- 3M Brand Non-Acid Bathroom Cleaner (Ready-to-Use)
- 3M Brand Sanitizer (Ready-to-Use)

CONCENTRATE CHEMICALS

- 3M Brand Bonnet Cleaner Concentrate
- 3M Brand Deodorizer Concentrate: Country Garden
- 3M Brand Deodorizer Concentrate: Fresh Scent
- 3M Brand Deodorizer Concentrate: Mountain Spice
- 3M Brand Non-Acid Bathroom Cleaner Concentrate
- 3M Brand Sanitizer Concentrate

8. HEALTH HAZARD DATA (continued)

SKIN CONTACT:
Moderate Skin Irritation: signs/symptoms can include redness, swelling, itching, and dryness.

INHALATION:
Single overexposure, above recommended guidelines, may cause:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Illness may occur after a single swallowing of relatively large quantities of this material.

Ingestion may cause:

Gastrointestinal Effects: signs/symptoms generally will include abdominal pain.

OTHER HEALTH HAZARD INFORMATION:
HMIS: HEALTH=2 /FLAMMABILITY=1 /REACTIVITY=0 /PERSONAL PROTECTION=B

SECTION CHANGE DATES

HEADING	SECTION CHANGED SINCE May 30, 1995	ISSUE
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Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

Ready-to-Use
Chemicals

MATERIAL SAFETY DATA SHEET
3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE
3M ID NUMBER/U.P.C.:
70-0706-5317-8 - - - XN-1014-5736-6 - - -
ISSUED: June 20, 1995
SUPERSEDES: May 30, 1995
DOCUMENT: 05-3153-3

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER.....	7732-18-5	60 - 90
CARBOXYIMIDAZOLINIUM SALT.....	13039-35-5	15 - 40
FRAGRANCE.....	Unknown	1 - 5

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS MATERIAL.

2. PHYSICAL DATA

BOILING POINT:..... ca. 210 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... N/D
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1.1 Water=1
PERCENT VOLATILE:..... ca. 70 %
VOLATILE ORGANIC COMPOUNDS:..... ca. 5 %
VOC LESS H2O & EXEMPT SOLVENTS: N/D
pH:..... 9 - 10
VISCOSITY:..... < 100 centipoise
MELTING POINT:..... N/A

APPEARANCE AND ODOR:
Liquid, clear, green color, pleasant fragrance

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... > 200 F
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... N/A
AUTOIGNITION TEMPERATURE:..... N/D

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE
June 20, 1995

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3. FIRE AND EXPLOSION HAZARD DATA (continued)

EXTINGUISHING MEDIA:
Water, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
No unusual fire or explosion hazards are anticipated.

NFPA HAZARD CODES: HEALTH: 2 FIRE: 1 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Observe precautions from other sections. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.

RECOMMENDED DISPOSAL:
Incinerate in an industrial or commercial facility in the presence of a combustible material.

ENVIRONMENTAL DATA:
Not determined.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER (Ready-to-Use)
November 15, 1994

PAGE 3

5. ENVIRONMENTAL INFORMATION (continued)

FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact. Avoid eye contact with vapor, spray, or mist.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:
Use in a well-ventilated area. Use with adequate dilution ventilation.

RESPIRATORY PROTECTION:
Avoid prolonged breathing of vapors. Avoid prolonged breathing of spray or mists.

PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating.

RECOMMENDED STORAGE:
Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER (Ready-to-Use)
November 15, 1994

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7. PRECAUTIONARY INFORMATION (continued)

EXPOSURE LIMITS					
INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	
1-PROPOXY-2-PROPANOL.....	NONE	NONE	NONE	NONE	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Mild Eye Irritation: signs/symptoms can include redness, swelling, pain, and tearing.

SKIN CONTACT:
Mild Skin Irritation (after prolonged or repeated contact): signs/symptoms can include redness, swelling, and itching.

INHALATION:
Prolonged or repeated exposure may cause:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Ingestion may cause:

Gastrointestinal Effects: signs/symptoms generally will include abdominal pain.

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

MSDS: 3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE
February 13, 1995

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5. ENVIRONMENTAL INFORMATION (continued)

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number - None (Not U.S. EPA Hazardous).

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: No

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact. Wear vented goggles.

** When used as directed, eye contact with this material is not expected to occur.

SKIN PROTECTION:
Avoid skin contact.

** When used as directed, skin contact with this material is not expected to occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER (Ready-to-Use): COUNTRY GARDEN
June 21, 1995

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5. ENVIRONMENTAL INFORMATION (continued)

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number - None (Not U.S. EPA Hazardous).

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: No CHRONIC: No

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
Wash affected area with soap and water.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:
Not applicable.

RESPIRATORY PROTECTION:
Avoid prolonged breathing of spray or mists.

PREVENTION OF ACCIDENTAL INGESTION:
Do not ingest.

RECOMMENDED STORAGE:
Keep container closed when not in use. Keep out of the reach of children.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE
February 13, 1995

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7. PRECAUTIONARY INFORMATION (continued)

RECOMMENDED VENTILATION:
Use in a well-ventilated area.

** When used as directed, no special ventilation is required.

RESPIRATORY PROTECTION:
Avoid breathing of vapors, mists or spray.

** When used as directed, respiratory protection is not required.

PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating.

RECOMMENDED STORAGE:
Store away from heat. Keep container in well-ventilated area.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed.

OTHER PRECAUTIONARY INFORMATION:
** NOTE: This material is intended to be diluted only with the 3M Twist 'N Fill Chemical Dispenser.

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
POLYALKOXY ALCOHOLS.....	NONE	NONE	NONE	NONE	
FRAGRANCE.....	NONE	NONE	NONE	NONE	
WATER.....	NONE	NONE	NONE	NONE	
EMULSIFIER.....	NONE	NONE	NONE	NONE	
1-METHOXY-2-PROPANOL.....	100	PPM	TWA	ACGIH	
1-METHOXY-2-PROPANOL.....	150	PPM	STEL	ACGIH	
1-METHOXY-2-PROPANOL.....	100	PPM	TWA	OSHA	
1-METHOXY-2-PROPANOL.....	150	PPM	STEL	OSHA	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- ACGIH: American Conference of Governmental Industrial Hygienists
- OSHA: Occupational Safety and Health Administration
- NONE: None Established

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER (Ready-to-Use): COUNTRY GARDEN
June 21, 1995

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7. PRECAUTIONARY INFORMATION (continued)

FIRE AND EXPLOSION AVOIDANCE:
Not applicable.

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	
POLYALKOXY ALCOHOLS.....	NONE	NONE	NONE	NONE	
FRAGRANCE.....	NONE	NONE	NONE	NONE	
EMULSIFIER.....	NONE	NONE	NONE	NONE	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Mild Eye Irritation: signs/symptoms can include redness, swelling, pain, and tearing.

SKIN CONTACT:
Contact with the skin during product use is not expected to result in significant irritation.

INHALATION:
No adverse health effects are expected from inhalation exposure.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

OTHER HEALTH HAZARD INFORMATION:
HMIS: HEALTH=0 /FLAMMABILITY=0 /REACTIVITY=0 /PERSONAL PROTECTION=A

SECTION CHANGE DATES

HEALTH HAZARD DATA SECTION CHANGED SINCE November 15, 1994 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

8. HEALTH HAZARD DATA (continued)

SKIN CONTACT:
Lung Inflammation: Product contains surfactants which have been shown in animal studies to cause lung inflammation resulting from prolonged skin contact. Signs/symptoms can include coughing and shortness of breath.

Moderate Skin Irritation: signs/symptoms can include redness, swelling, itching, and dryness.

May be absorbed through the skin in harmful amounts.

INHALATION:
Single overexposure, above recommended guidelines, may cause:
Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Ingestion may cause:
Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

SECTION CHANGE DATES

HEADING SECTION CHANGED SINCE November 15, 1994 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

MATERIAL SAFETY DATA SHEET 3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand DEODORIZER (Ready-to-Use): FRESH SCENT
3M ID NUMBER:
ISSUED: November 15, 1994
SUPERSEDES: INITIAL ISSUE
DOCUMENT: 06-8478-7

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER.....	7732-18-5	> 95
POLYALKOXY ALCOHOLS.....	69013-18-9	< 1
FRAGRANCE.....	TradeSecret	< 1
EMULSIFIBR.....	9005-64-5	< 1

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT:..... 212 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... 1 Water=1
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1 Water=1
PERCENT VOLATILE:..... ca. 99 %
VOLATILE ORGANIC COMPOUNDS:..... < 1 %
VOC LESS H2O & EXEMPT SOLVENTS:..... < 1 %
pH:..... ca. 7
VISCOSITY:..... < 100 centipoise
Melting point:..... N/A

APPEARANCE AND ODOR:
Liquid, clear; blue color; fresh, clean fragrance.

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... N/A
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... N/A
AUTOIGNITION TEMPERATURE:..... N/A

Abbreviations: N/D - Not Determined N/A - Not Applicable

3. FIRE AND EXPLOSION HAZARD DATA (continued)

EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Not applicable.

NFPA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Not applicable.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Collect spilled material. Clean up residue.

RECOMMENDED DISPOSAL:
Flush spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Dispose of waste product in a sanitary landfill.

ENVIRONMENTAL DATA:
Not determined.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY DATA SHEET
3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand DEODORIZER CONCENTRATE: FRESH SCENT
3M ID NUMBER/U.P.C.:
70-0706-3516-7 00-48011-20121-9
ISSUED: February 13, 1995
SUPERSEDES: November 15, 1994
DOCUMENT: 06-8475-3

1. INGREDIENT	C.A.S. NO.	PERCENT
POLYALKOXY ALCOHOLS	69013-18-9	30 - 60
FRAGRANCE	TradeSecret	10 - 30
WATER	7732-18-5	10 - 30
EMULSIFIER	9005-64-5	10 - 30

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT: ca. 212 F
VAPOR PRESSURE: N/D
VAPOR DENSITY: N/D
EVAPORATION RATE: N/D
SOLUBILITY IN WATER: complete
SPECIFIC GRAVITY: ca. 1 Water=1
PERCENT VOLATILE: ca. 50 %
VOLATILE ORGANIC COMPOUNDS: ca. 25 %
VOC LESS H2O & EXEMPT SOLVENTS: N/D
pH: 6 - 7
VISCOSITY: < 100 centipoise
MELTING POINT: N/A

APPEARANCE AND ODOR:
Liquid, clear; dark blue color; strong fragrance

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: > 212 F TCC
FLAMMABLE LIMITS - LEL: N/D
FLAMMABLE LIMITS - UEL: N/D
AUTOIGNITION TEMPERATURE: N/D

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER CONCENTRATE: FRESH SCENT
February 13, 1995

PAGE 2

3. FIRE AND EXPLOSION HAZARD DATA (continued)

EXTINGUISHING MEDIA:
Water, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
No unusual fire or explosion hazards are anticipated.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 1 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Strong Oxidizing Agents.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide, Irritant Vapors or Gases.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.

RECOMMENDED DISPOSAL:
Small quantities (less than 5 gal.(19 L)) may be discharged to a wastewater treatment system. Incinerate in a permitted hazardous waste incinerator. Dispose of completely absorbed waste product in a hazardous waste facility.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY DATA SHEET
3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand DEODORIZER (Ready-to-Use): MOUNTAIN SPICE
3M ID NUMBER:
ISSUED: November 15, 1994
SUPERSEDES: INITIAL ISSUE
DOCUMENT: 06-8479-5

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER	7732-18-5	> 95
POLYALKOXY ALCOHOLS	69013-18-9	< 1
FRAGRANCE	TradeSecret	< 1
EMULSIFIER	9005-64-5	< 1

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT: 212 F
VAPOR PRESSURE: N/D
VAPOR DENSITY: N/D
EVAPORATION RATE: 1 Water=1
SOLUBILITY IN WATER: complete
SPECIFIC GRAVITY: ca. 1 Water=1
PERCENT VOLATILE: ca. 99 %
VOLATILE ORGANIC COMPOUNDS: < 1 %
VOC LESS H2O & EXEMPT SOLVENTS: < 1 %
pH: ca. 7
VISCOSITY: < 100 centipoise
Melting point: N/A

APPEARANCE AND ODOR:
Liquid, clear; green color; spicy fragrance.

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A
FLAMMABLE LIMITS - LEL: N/A
FLAMMABLE LIMITS - UEL: N/A
AUTOIGNITION TEMPERATURE: N/A

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER (Ready-to-Use): MOUNTAIN SPICE
November 15, 1994

PAGE 2

3. FIRE AND EXPLOSION HAZARD DATA (continued)

EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Not applicable.

NFPA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Not applicable.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Collect spilled material. Clean up residue.

RECOMMENDED DISPOSAL:
Flush spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Dispose of waste product in a sanitary landfill.

ENVIRONMENTAL DATA:
Not determined.

Abbreviations: N/D - Not Determined N/A - Not Applicable

5. ENVIRONMENTAL INFORMATION (continued)

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: No

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT:
Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact. Wear vented goggles.

** When used as directed, eye contact with this material is not expected to occur.

SKIN PROTECTION:
Avoid skin contact.

** When used as directed, skin contact with this material is not expected to occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY DATA SHEET
3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand NON-ACID BATHROOM CLEANER (Ready-to-Use)
ISSUED: May 30, 1995
SUPERSEDES: INITIAL ISSUE
DOCUMENT: 05-8144-7

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER.....	7732-18-5	> 95
CARBOXYMIDAZOLINIUM SALT.....	13039-35-5	< 1
FRAGRANCE.....	Unknown	< 1

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS MATERIAL.

2. PHYSICAL DATA

BOILING POINT:..... ca. 210 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... N/D
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1.00 Water=1
PERCENT VOLATILE:..... ca. 98 %
VOLATILE ORGANIC COMPOUNDS:..... < 12 gms/liter
VOC LESS H2O & EXEMPT SOLVENTS: N/D
pH:..... 8 - 9
VISCOSITY:..... < 100 centipoise
MELTING POINT:..... N/A

APPEARANCE AND ODOR:
Liquid, clear; light green color; pleasant fragrance

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... N/A
FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... N/A
AUTOIGNITION TEMPERATURE:..... N/D

EXTINGUISHING MEDIA:
Water, Carbon dioxide, Dry chemical, Foam

Abbreviations: N/D - Not Determined N/A - Not Applicable

7. PRECAUTIONARY INFORMATION (continued)

RECOMMENDED VENTILATION:
Use in a well-ventilated area.

** When used as directed, no special ventilation is required.

RESPIRATORY PROTECTION:
Avoid breathing of vapors, mists or spray.

** When used as directed, respiratory protection is not required.

PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating.

RECOMMENDED STORAGE:
Store away from heat. Keep container in well-ventilated area.

FIRE AND EXPLOSION AVOIDANCE:
Keep container tightly closed.

OTHER PRECAUTIONARY INFORMATION:
** NOTE: This material is intended to be diluted only with the 3M Twist 'N Fill Chemical Dispenser.

EXPOSURE LIMITS					
INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
POLYALKOXY ALCOHOLS.....	NONE	NONE	NONE	NONE	NONE
FRAGRANCE.....	NONE	NONE	NONE	NONE	NONE
WATER.....	NONE	NONE	NONE	NONE	NONE
EMULSIFIER.....	NONE	NONE	NONE	NONE	NONE
1-METHOXY-2-PROPANOL.....	100	PPM	TWA	ACGIH	
1-METHOXY-2-PROPANOL.....	150	PPM	STEL	ACGIH	
1-METHOXY-2-PROPANOL.....	100	PPM	TWA	OSHA	
1-METHOXY-2-PROPANOL.....	150	PPM	STEL	OSHA	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- ACGIH: American Conference of Governmental Industrial Hygienists
- OSHA: Occupational Safety and Health Administration
- NONE: None Established

Abbreviations: N/D - Not Determined N/A - Not Applicable

3. FIRE AND EXPLOSION HAZARD DATA (continued)

SPECIAL FIRE FIGHTING PROCEDURES:
None known.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
No unusual fire or explosion hazards are anticipated.

NFPA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Observe precautions from other sections. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.

RECOMMENDED DISPOSAL:
Discharge spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. For larger quantities: Incinerate in an industrial or commercial facility in the presence of a combustible material.

ENVIRONMENTAL DATA:
Not determined.

REGULATORY INFORMATION:
Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

EPCRA HAZARD CLASS:
FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: No

Abbreviations: N/D - Not Determined N/A - Not Applicable

EXPOSURE LIMITS (continued)					
INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
FRAGRANCE.....	NONE	NONE	NONE	NONE	
SODIUM DODECYLBENZENESULFONATE.....	NONE	NONE	NONE	NONE	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

SKIN CONTACT:
Moderate Skin Irritation: signs/symptoms can include redness, swelling, itching, and dryness.

May be absorbed through the skin and produce effects similiar to those caused by inhalation and/or ingestion.

INHALATION:
Single exposure may cause:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

Prolonged or repeated exposure may cause:

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

WHILE THE FOLLOWING EFFECTS ARE ASSOCIATED WITH ONE OR MORE OF THE INDIVIDUAL INGREDIENTS IN THIS PRODUCT AND ARE REQUIRED TO BE INCLUDED ON THE MSDS BY THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THEY ARE NOT EXPECTED EFFECTS DURING FORESEEABLE USE OF THIS PRODUCT.

Prolonged or repeated exposure may cause:

Kidney Effects: signs/symptoms can include reduced urine volume, blood in urine and back pain.

Liver Effects: signs/symptoms can include yellow skin(jaundice) and tenderness of upper abdomen.

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

8. HEALTH HAZARD DATA (continued)

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

Ingestion may cause:

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

Aspiration Pneumonitis: signs/symptoms can include coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

OTHER HEALTH HAZARD INFORMATION:
HMIS: HEALTH=1 /FLAMMABILITY=2 /REACTIVITY=0 /PERSONAL PROTECTION=B

SECTION CHANGE DATES

HEALTH HAZARD DATA SECTION CHANGED SINCE February 13, 1995 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

MATERIAL SAFETY DATA SHEET
3M
3M Center
St. Paul, Minnesota
55144-1000
(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
3M Brand BONNET CLEANER CONCENTRATE
3M ID NUMBER/U.P.C.:
70-0706-3509-2 00-48011-20114-1 70-0706-3510-0 00-48011-20115-8
ISSUED: September 15, 1995
SUPERSEDES: February 13, 1995
DOCUMENT: 06-7835-9

1. INGREDIENT	C.A.S. NO.	PERCENT
WATER.....	7732-18-5	60 - 90
1-PROPOXY-2-PROPANOL.....	1569-01-3	5 - 10
STYRENE MALEIC ANHYDRIDE RESIN AMMONIUM SALT.....	26022-09-3	1 - 5
Fluorocaliphatic acid salt (N.J. trade secret registry 04499600-5170P).....	TradeSecret	1 - 5
FRAGRANCE.....	Unknown	1 - 5
SODIUM DODECYLBENZENESULFONATE.....	25155-30-0	1 - 5

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT:..... ca. 212 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY:..... N/D
EVAPORATION RATE:..... ca. 1 Water=1
SOLUBILITY IN WATER:..... complete
SPECIFIC GRAVITY:..... ca. 1.01 Water=1
PERCENT VOLATILE:..... ca. 95 %
VOLATILE ORGANIC COMPOUNDS:..... < 100 gms/liter
VOC LESS H2O & EXEMPT SOLVENTS: < 100 gms/liter
pH:..... 7 - 9
VISCOSITY:..... < 100 centipoise
MELTING POINT:..... N/A

APPEARANCE AND ODOR:
Liquid, clear; colorless to light amber color; pleasant fragrance

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER CONCENTRATE
September 15, 1995

PAGE 2

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... ca. 142 F TCC
FLAMMABLE LIMITS - LEL:..... N/D
FLAMMABLE LIMITS - UEL:..... N/D
AUTOIGNITION TEMPERATURE:..... N/D

EXTINGUISHING MEDIA:
Water, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES:
Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Not applicable.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 2 REACTIVITY: 0
UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Class IIIA Combustible Liquid

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon Monoxide and Carbon Dioxide.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Extinguish all ignition sources. Collect spilled material. Clean up residue with water.

RECOMMENDED DISPOSAL:
Flush spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Incinerate in a permitted hazardous waste incinerator in the presence of a combustible material.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER (Ready-to-Use)
April 10, 1995

PAGE 3

6. SUGGESTED FIRST AID

EYE CONTACT:
Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:
Wash affected area with soap and water.

INHALATION:
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:
Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:
Avoid eye contact with vapor, spray, or mist.

SKIN PROTECTION:
Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:
Provide ventilation adequate to control vapor concentrations below recommended exposure limits and/or control spray or mist.

RESPIRATORY PROTECTION:
Avoid prolonged breathing of spray or mists.

PREVENTION OF ACCIDENTAL INGESTION:
Do not ingest.

RECOMMENDED STORAGE:
Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:
Not applicable.

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
WATER.....	NONE	NONE	NONE	NONE	NONE
DIDECYLDIMETHYLAMMONIUM CHLORIDE.....	NONE	NONE	NONE	NONE	NONE
ALKYLDIMETHYLBENZYL AMMONIUM CHLORIDE.....	NONE	NONE	NONE	NONE	NONE

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER (Ready-to-Use)
April 10, 1995

PAGE 4

EXPOSURE LIMITS (continued)

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
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* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:
Mild Eye Irritation: signs/symptoms can include redness, swelling, pain, and tearing.

SKIN CONTACT:
No adverse health effects are expected from skin contact.

INHALATION:
No adverse health effects are expected from inhalation exposure.

IF SWALLOWED:
Ingestion is not a likely route of exposure to this product.

No adverse health effects are expected from swallowing.

OTHER HEALTH HAZARD INFORMATION:
HMIS: HEALTH=0 /FLAMMABILITY=0 /REACTIVITY=0 / PERSONAL PROTECTION=A

SECTION CHANGE DATES

HEALTH HAZARD DATA SECTION CHANGED SINCE April 04, 1995 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

RECEIVED

SEP 25 1995

PRODUCT NAME

BY:

STAINLESS STEEL CASTINGS

Refer to Material Safety Data
Sheet for more information

MANUFACTURER



Eagle Foundry Co.
P.O. Box 250
Eagle Creek, OR 97022
(503) 637-3048 FAX-3091

FIRE HAZARD

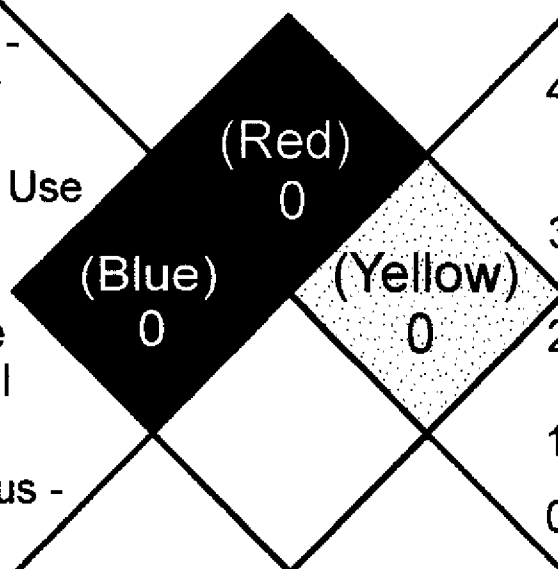
4. Extremely Dangerous Fire and Explosion Hazard
3. Fire and Explosion Hazard at Normal Temp.
2. Will Burn at Temps. Above 100 deg. F.
1. Will Burn at Temps. above 200 deg. F
0. Will Not Burn

**HEALTH
HAZARD**

4. Extreme Hazard -
Avoid Contact or
Breathing Vapor.
3. Severe Hazard - Use
Special clothing
and Masks.
2. Hazardous - Use
Masks or Special
Ventilation.
1. Slightly Hazardous -
Irritating.
0. Normal
Material.

**REACT-
IVITY
HAZARD**

4. Extreme Hazard -
Vacate Area in
Case of Fire
3. Severe Explosion
Hazard
2. Violent Chemical
Change Possible
1. Unstable if Heated
0. Normally Stable



**CAUTION! WELDING, CUTTING OR
GRINDING ON THIS CASTING WILL
GENERATE TOXIC DUST AND FUMES**

INGREDIENTS:

See Material Safety Data Sheet for listing
of ingredients

STORAGE AND HANDLING

NO SPECIAL PRECAUTIONS

MATERIAL SAFETY DATA SHEET (MSDS)
CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200
"HAZARD COMMUNICATION" AND TO VARIOUS STATE
"EMPLOYEE RIGHT TO KNOW" LAWS

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: STAINLESS STEEL

INCLUDES: 16-2, HC, HD, HE, HF, HH, HK, HK40, HL and HT

ASTM ALLOY DESIGNATION

A297/A297M-89

PROPRIETARY ALLOY

16-2

VENDOR NAME AND ADDRESS:

EAGLE FOUNDRY COMPANY
P.O. BOX 250
EAGLE CREEK, OR 97022-0250
(503) 637-3048

EMERGENCY PHONE NUMBER:

HAZARD CLASSIFICATIONS

FIRE: 0

HEALTH: 0

REACTIVITY: 0

FOURTH DIAMOND:

ANSI: CAUTION! WELDING, CUTTING OR GRINDING ON THIS CASTING WILL
GENERATE TOXIC DUST AND OR FUMES

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Aluminum	7429-90-5	0.00 - 0.25	10 mg/cu.m	N/E
Carbon	7440-44-0	0.03 - 0.75	N/E	N/E
Chromium	7440-47-3	10.0 - 52.0	0.5 mg/cu.m	1 mg/cu.m
Chromium * (hexavalent)			0.05 mg/cu.m	N/E
Cobalt	7440-48-4	0.00 - 2.5	0.1 mg/cu.m	0.1 mg/cu.m
Columbium		0.00 - 1.2	N/E	N/E
Copper	7440-50-8	0.00 - 4.0	.2 mg/cu.m as fume 1 mg/cu.m as dust	.1 mg/cu.m as fume 1 mg/cu.m as dust
Iron	7439-89-6	balance	5 mg/cu.m	10 mg/cu.m
Manganese	7439-96-5	0.30 - 6.00	C 5 mg/cu.m as dust 1 mg/cu.m as fume	C 5 mg/cu.m as dust C 5 mg/cu.m as fume
Molybdenum	7439-8-7	0.00 - 20.0	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	0.00 - 40.0	1 mg/cu.m	1 mg/cu.m
Nitrogen	7727-37-9	0.00 - 0.3	N/E	N/E

N/E means none established.

N/A means not applicable.

N/D means no data available

Phosphorus	7723-14-0	0.00 - 0.3	.1 mg/cu.m	.1 mg/cu.m
Silicon	7440-21-3	0.50 - 3.50	10 mg/cu.m as dust	15 mg/cu.m
Sulfur	7704-34-9	0.00 - 0.15	N/E	N/E
Tantalum	7740-25-7	0.00 - 1.1	5 mg/cu.m	5 mg/cu.m
Titanium	7440-32-6	0.00 - 0.50	N/E	N/E
Tungsten	7440-33-7	0.00 - 5.25	5 mg/cu.m	N/E
Vanadium as vanadium oxide	1314-62-1	0.00 - 0.40	0.05 mg/cu.m as dust 0.05 mg/cu.m as fume	0.5 mg/cu.m as dust 0.1 mg/cu.m as fume

"C" MEANS CEILING LIMIT - these are limits which should not be exceeded, even for a short time. All other are 8 hr. Time-weighted average concentrations.

* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Government Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Welding or flame cutting may convert a fraction of the chromium to the water insoluble hexavalent (carcinogenic) form

Dust or fumes generated by machining, grinding, or welding on the casting will put contaminants in the air. Since the casting contains mostly chromium and/or nickel, most of the airborne contaminants will be chromium and nickel dust and fumes.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting processes no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

High production machining, grinding, welding operations, etc. Frequently require local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust and fume respirator.

Grinding on castings that have not been cleaned or that contain embedded sand will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

N/E means none established.

N/A means not applicable.

N/D means no data available

The other metals in stainless steel castings are present in small amounts compared to the nickel and chromium. If airborne concentrations of chromium and nickel are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if iron dust and fume are adequately controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor.

BOILING POINT: variable depending on casting grade.

VAPOR PRESSURE: N/A.

SOLUBILITY IN WATER: N/A.

SPECIFIC GRAVITY: 8.9 for nickel.

PERCENT VOLATILE BY VOLUME: N/A.

EVAPORATION RATE: N/A.

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: Dust of fumes may cause irritation. In some sensitive people, allergic dermatitis may develop.

BREATHING: Over exposure to chromium fumes may cause nose irritation.

Repeated inhalation, especially when combined with inadequate personal hygiene, may result in a perforated nasal septum. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A.

NOISE: Grinding or machining castings is noisy.

The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), a hearing conservation program is required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

FIRST AID

IF IN EYES: Metal Particles should be removed by trained individuals such as a Nurse or Physician.

IF ON SKIN: N/A.

IF BREATHED: (fumes from welding): Move to fresh air.

IF SWALLOWED: N/A.

N/E means none established.

N/A means not applicable.

N/D means no data available

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. May be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dust or fumes if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.

N/E means none established.

N/A means not applicable.

N/D means no data available

REPORT NUMBER: 703
SDS NO: 0X622680
EFFECTIVE DATE: 04/21/95

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

PAGE: 001
VERSION: 003

PRODUCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619
PROD NO : 640381

ASH GROVE CEMENT
13939 N. RIVERGATE BLVD

PORTLAND ,OR 97203

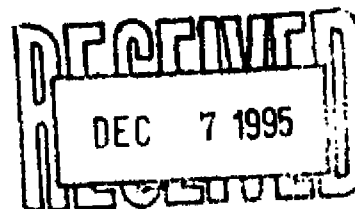
VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400
100 CARILLON POINT , KIRKLAND , WA 98033

----- EMERGENCY ASSISTANCE -----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

PRODUCT NAME:
SODIUM HYPOCHLORITE 7-15%

SDS #: 0X622680



I. PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM HYPOCHLORITE 7-15%
SYNONYMS: Liquid chlorine, liquid bleach, Pure Chlor, Sunny Sol 150
CHEMICAL FAMILY: Hypochlorite
FORMULA: NaOCl in water
DESCRIPTION: Swimming pool chlorinator, Microbiocide
OSHA HAZARD CLASSIFICATION: Oxidizer, unstable (reactive), corrosive
to skin and eyes, lung toxin

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Sodium hypochlorite
CAS NUMBER: 7681-52-9
PERCENTAGE RANGE: 7-15
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established
CAS or CHEMICAL NAME: Water
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 73-87

REPORT NUMBER: 703
SDS NO: DX622680
EFFECTIVE DATE: 04/21/95

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PRODUCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619
PROD NO : 640381

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Respirator protection not normally needed since the volatility and toxicity are low. If vapors, mists, or aerosols are generated, wear a NIOSH/MSHA approved respirator.

VENTILATION: Local exhaust ventilation is recommended if vapors, mists or aerosols are generated. Otherwise, use general exhaust ventilation.

SKIN PROTECTIVE EQUIPMENT: Use chemical safety goggles and impermeable gloves.

EQUIPMENT SPECIFICATIONS:

RESPIRATOR TYPE: NIOSH/MSHA approved respirator equipped with chemical cartridges for protection against chlorine gas and dust mist pre-filters.

GLOVE TYPE: Neoprene

BOOT TYPE: Not normally needed

PROON TYPE: Not normally needed

PROTECTIVE SUIT: Not normally needed

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

FLAMMABLE: No

COMBUSTIBLE: No

PYROPHORIC: No

FLASH POINT: Not Applicable

AUTOIGNITION TEMPERATURE : Not Applicable

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NFPA RATINGS: Not Established

HMIS RATINGS:

Health: 3

Flammability: 0

Reactivity: 2

EXTINGUISHING MEDIA: Not applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. On small fire, use dry chemical, Carbon dioxide or water spray. On large fires, use water in flooding quantities as fog. In case of fire, hazardous concentrations of chlorine may be formed. See Section XI for personal protective equipment for fire fighting.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE

TEMPERATURES ABOVE: Decomposes as it is heated

MECHANICAL SHOCK OR IMPACT: No

ELECTRICAL (STATIC) DISCHARGE: No

OTHER: Decomposition will result from contact with iron or copper

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PRODUCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619
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HAZARDOUS POLYMERIZATION: Will not occur

INCOMPATIBLE MATERIALS: Iron, copper, acids, ammonium compounds,
organics, other oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine gas

OTHER CONDITIONS TO AVOID: High heat, sunlight and ultra-violet light

SUMMARY OF REACTIVITY:

OXIDIZER: Yes
PYROPHORIC: No
ORGANIC PEROXIDE: No
WATER REACTIVE: No

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, skin, eye, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IF INHALED OR INGESTED. HARMFUL IF EXPOSED TO SKIN OR EYES.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: Approximately 0.9 mg/m³ (0.3 ppm) based on odor of chlorine.

IRRITATION THRESHOLD: There is no data for irritation threshold. Sodium hypochlorite has the potential to be immediately dangerous to life or health.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Inhalation of this material is irritating to the nose, mouth, throat

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and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.

CHRONIC:

Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

SKIN

ACUTE:

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin at site of contact to regenerate.

CHRONIC:

Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

INGESTION

ACUTE:

Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration.

CHRONIC:

There are no known or reported effects from chronic exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Asthma and respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

None known or reported.

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

INHALATION LC50: No available data
ORAL LD50: Approximately 3-5 g/kg (rat)
DERMAL LD50: > 2 g/kg (rabbit)
Causes burns to eyes and skin

AQUATIC TOXICITY:

Aquatic LC50 - approximately 0.6 mg/l (bluegill)
approximately 1 mg/l (daphnia, 48 hours)

CHRONIC TOXICITY:

There are no known or reported effects from repeated exposure.

REPRODUCTIVE TOXICITY:

There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY:

This product has been shown not to be carcinogenic. It is not included as a carcinogen by IARC, OSHA, NTP, or EPA.

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MUTAGENICITY:

Sodium hypochlorite has been shown to produce damage to genetic material when tested in vitro. Studies in vivo have shown no evidence of mutagenic potential for this material. Chemicals with potent biocidal activity, typical of hypochlorite compounds, may compromise the integrity of many of the treated cells which remain viable during an in vitro assay. This result would likely produce cellular changes giving rise to a response indicative of mutation. It is judged that the risk of genetic damage is insignificant for sodium hypochlorite because of its biocidal activity, lack of mutagenicity in vivo, and failure to produce a carcinogenic response.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:

LAND (U.S. DOT): HYPOCHLORITE SOLUTIONS, 8, UN1791, PG II

WATER (IMO): Same as above

AIR (IATA/ICAO): Same as above

HARD LABEL/PLACARD: CORROSIVE

REPORTABLE QUANTITY: 100 lbs. (Per 49 CFR 172.101, Appendix)

EMERGENCY GUIDE NO: 60

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300

REPORTABLE QUANTITY(POUNDS): 100 lbs. (Per 40 CFR 302.4)

SPILL MITIGATION PROCEDURES:

Hazardous concentrations in air may be found in local spill area and immediately downwind.

AIR RELEASE: Vapors may be suppressed by the use of a water fog. Capture all run off water for treatment and disposal.

WATER RELEASE: This material is soluble in water. Dike or contain material via use of compatible absorbents. Remove material with use of vacuum or pump operation and treat before disposition. This material is harmful to aquatic life.

LAND SPILL: Compatible absorbents: Sand, clay soil, commercial absorbents

SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:

Response to this material requires the use of self contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact with this material. These items include but are not limited to boots, gloves, hard hat, impervious clothing, i.e. chemically impermeable suit. Compatible materials for response to this material are neoprene, butyl rubber, viton and saranex.

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XII. WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations by treatment in a wastewater treatment system.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT: This substance is listed on the Toxic Substances Control Act inventory.

SAFEHUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III: None Established
HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH:

Immediate (Acute)

Delayed (Chronic)

PHYSICAL:

Fire

Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:

EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

None Established

XIV. ADDITIONAL INFORMATION

MSDS REVISION STATUS: Transportation information updated

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PRODUCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619
PROD NO : 640381

FOR ADDITIONAL INFORMATION

CONTACT: MSDS COORDINATOR VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)889-3400

12/07/95 11:23 PRODUCT: 640381 CUST NO: 107510 ORDER NO: 346619

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* * * E N D O F M S D S * * *

TEXACO
MATERIAL SAFETY DATA SHEET

This MSDS was printed utilizing access to Texaco's CD-ROM MSDS Database.
Due to variations in printer dependent character styles, fonts and computer
control codes, the appearance may differ from that of the centrally printed
Texaco MSDS.

NOTE: Read and understand Material Safety Data Sheet before handling or
disposing of product.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

Product Code and Name:

W2324 MEROPA 320

Chemical Name and/or Family or Description:

Gear Oils

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

Telephone Numbers:

Transportation Emergency-Company : (914) 831-3400

CHEMTREC : (800) 424-9300

Health Emergency -Company : (914) 831-3400

General MSDS Assistance : (914) 838-7204

Technical Information -Fuels : (914) 838-7336

-Chemical : (512) 459-6543

-Lubricant/: (800) 782-7852

Antifreezes

-Additives : (713) 235-6278

-Solvents : (800) 876-3738

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N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

COMPOSITION/INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION.

Product and/or Component(s) Carcinogenic According to:

OSHA IARC NTP OTHER NONE

X

Composition: (Sequence Number and Chemical Name)

Seq.	Chemical Name	CAS Number	Range in %
------	---------------	------------	------------

01 #	Solvent deasphalted residual oil	64741-95-3	65.00-79.99
------	----------------------------------	------------	-------------

02 #	Solvent dewaxed, heavy paraffinic petroleum distillate	64742-65-0	20.00-34.99
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PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Exposure Limits referenced by Sequence Number in the Composition Section

Seq. Limit

5	mg/m3 TWA-OSHA (MINERAL OIL MIST)
5	mg/m3 TWA-ACGIH (MINERAL OIL MIST)
01 10	mg/m3 STEL ACGIH (MINERAL OIL MIST)
02 5	mg/m3 TWA-OSHA (MINERAL OIL MIST)
02 5	mg/m3 TWA-ACGIH (MINERAL OIL MIST)
02 10	mg/m3 STEL ACGIH (MINERAL OIL MIST)

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PRODUCT CODE: W2324
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Date Issued: 12/08/95
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HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance:

Dark red liquid

Odor:

Not determined

WARNING STATEMENT

NONE CONSIDERED NECESSARY

HMIS

NFPA

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0

Flammability: 1 Special: - Flammability: 1 Special: -

POTENTIAL HEALTH EFFECTS

EYE SKIN INHALATION INGESTION

Primary Route of Exposure: X X X

EFFECTS OF OVEREXPOSURE

Acute:

Eyes:

May cause minimal irritation, experienced as temporary discomfort.

Skin:

Brief contact is not irritating. Prolonged contact, as with clothing wetted with material, may cause defatting of skin or irritation, seen as local redness with possible mild discomfort.

Other than the potential skin irritation effects noted above, acute (short term) adverse effects are not expected from brief skin contact; see other effects, below, and Section 11 for information regarding potential long term effects.

Inhalation:

Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness.

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N.D. - NOT DETERMINED

N.A. - NOT APPLICABLE

N.T. - NOT TESTED

< - LESS THAN

> - GREATER THAN

PRODUCT CODE: W2324
NAME: MEROPA 320

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HAZARD IDENTIFICATION (CONT)

Ingestion:

If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.

Sensitization Properties:

Unknown.

Chronic:

No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure:

Because of its defatting properties, prolonged and repeated skin contact may aggravate an existing dermatitis (skin condition).

Other Remarks:

None

4. FIRST AID MEASURES

Eyes:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

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N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
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FIRST AID MEASURES (CONT)

Other Instructions:

Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Ignition Temperature - AIT (degrees F):

Not determined.

Flash Point (degrees F):

420 (COC)

Flammable Limits (%):

Lower: Not determined.

Upper: Not determined.

Recommended Fire Extinguishing Agents And Special Procedures:

Use water spray, dry chemical, foam, or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

Unusual or Explosive Hazards:

None

Special Protective Equipment for Firefighters:

No special equipment or procedures required.

6. ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:

Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

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Date Issued: 12/08/95
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ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

If more than 6,218,905 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)).

7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Minimum feasible handling temperatures should be maintained.

Storage:

Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water.

Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Adequate to meet component occupational exposure limits (see Section 2).

Exposure Limit for Total Product:

None established for product; refer to Section 2 for component exposure limits.

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PRODUCT CODE: W2324
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Supersedes: 09/15/95

PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Dark red liquid

Odor:

Not determined

Boiling Point (degrees F):

Not determined.

Melting/Freezing point (degrees F):

Not determined.

Specific Gravity (water=1):

.8973

pH of undiluted product:

Not applicable.

Vapor Pressure:

Not determined.

Viscosity:

315 cSt at 40.0 C

VOC Content:

Not determined.

Vapor Density (air=1):

Not determined.

Solubility in Water (%):

Not determined.

Other: None

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PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

STABILITY AND REACTIVITY

This Material Reacts Violently With:

(If Others is checked below, see comments for details)

Air Water Heat Strong Oxidizers Others None of These

X

Comments:

None

Products Evolved When Subjected to Heat or Combustion:

Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones.

Hazardous Polymerizations: DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION(ANIMAL TOXICITY DATA)

Median Lethal Dose

Oral:

LD50 Believed to be > 5.00 g/kg (rat) practically non-toxic

Inhalation:

Not determined.

Dermal:

LD50 Believed to be > 2.00 g/kg (rabbit) practically non-toxic

Irritation Index, Estimation of Irritation (Species)

Skin:

(Draize) Believed to be < .50 /8.0 (rabbit) no appreciable effect

Eyes:

(Draize) Believed to be < 15.00 /110 (rabbit) no appreciable effect

Sensitization:

Not determined.

Other:

None

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N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
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PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form.

Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Remarks

None

13. TRANSPORT INFORMATION

Transportation

DOT:

Proper Shipping Name:

Not regulated

IMDG:

Proper Shipping Name:

Not evaluated

ICAO:

Proper Shipping Name:

Not evaluated

TDG:

Proper Shipping Name:

Not evaluated

14. REGULATORY INFORMATION

Federal Regulations:

SARA Title III:

Section 302/304 Extremely Hazardous Substances

Seq. Chemical Name	CAS Number	Range in %
--------------------	------------	------------

None

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N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324
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REGULATORY INFORMATION (CONT)

Section 302/304 Extremely Hazardous Substances (CONT)

Seq. TPQ RQ

None

Section 311 Hazardous Categorization:

Acute Chronic Fire Pressure Reactive N/A
X

Section 313 Toxic Chemical

Chemical Name CAS Number Concentration

None

CERCLA 102(a)/DOT Hazardous Substances: (+ indicates DOT Hazardous Substance)

Seq. Chemical Name CAS Number Range in %

01+ Toluene 108-88-3 0.01-0.09

CERCLA/DOT Hazardous Substances (Sequence Numbers and RQ's):

Seq. RQ

01+ 1000

TSCA Inventory Status:

This product, or its components, are listed on or are exempt from the
Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

Other:

Not evaluated.

State Regulations:

California Proposition 65:

The following detectable components of this product are substances,
or belong to classes of substances, known to the State of California
to cause cancer and/or reproductive toxicity.

Chemical Name CAS Number

Toluene 108-88-3

States Right-to-know Regulations:

PAGE: 10

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

REGULATORY INFORMATION (CONT)

Chemical Name	State Right-to-know
---------------	---------------------

Toluene	CT,FL,IL,MA,NJ,PA,RI,MI
Isopropyl alcohol	CT,FL,IL,MA,NJ,PA,RI

State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan),
LA (Louisiana), MA (Massachusetts), NJ (New Jersey),
PA (Pennsylvania), RI (Rhode Island)

International Regulations:

Export Notification (TSCA-12b):

This product may be subject to export notification under TSCA
section 12(b); contains:

Isopropyl alcohol

WHMIS Classification:

Not regulated

Canada Inventory Status:

Not determined.

EINECS Inventory Status:

Not determined.

Australia Inventory Status:

Not determined.

Japan Inventory Status:

Not determined.

15. ENVIRONMENTAL INFORMATION

Aquatic Toxicity:

Not determined.

Mobility:

Not determined.

Persistence and Biodegradability:

Not determined.

----- PAGE: 11 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

ENVIRONMENTAL INFORMATION (CONT)

Potential to Bioaccumulate:

Not determined.

Remarks:

None

16. OTHER INFORMATION

Definitions of Terms:

OSHA - Occupational Safety and Health Administration (a regulatory and enforcement agency of safety and health in most United States industrial sectors; part of the United States Department of Labor.

PEL - Permissible Exposure Limit, OSHA workplace exposure limits for hazardous materials.

IARC - International Agency for Research on Cancer (part of the World Health Organization).

NTP - National Toxicology Program (overseen by the United States Department of Health and Human Services), develops tests for public health regulation of toxic chemicals.

ACGIH - American Conference of Government Industrial Hygienists, develops recommended exposure limits for chemical substances and physical agents.

TLV - Threshold Limit Value, ACGIH term for the airborne concentration of a material to which nearly all healthy workers can be exposed without adverse effects.

TLV-STEL- Short-term exposure limit, for brief exposure. (15 minutes)

TWA- Time weighted average concentration, for longer exposure.(8 hours)

HMIS - Hazardous Materials Identification System, developed by the National Paint and Coatings Association; numbers assigned to indicate the degree of hazard, with 0 for least severe to 4 for most severe.

NFPA - National Fire Protection Association (an international organization to promote fire prevention); a hazard rating system similar to HMIS.

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT FOR PURPOSE OF HAZARD COMMUNICATION AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU

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N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

OTHER INFORMATION (CONT)

ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN. TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date: 12-08-95 New X Revised, Supersedes: 09-15-95

Inquiries regarding MSDS should be directed to:

Texaco Inc.

Manager, Product Safety

P.O. Box 509

Beacon, N.Y. 12508

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

----- PAGE: 13 -----

N.D. - NOT DETERMINED

N.A. - NOT APPLICABLE

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< - LESS THAN

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PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

PRODUCT LABEL

Label Date: 12-08-95

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

W2324 MEROPA 320

WARNING STATEMENT

NONE CONSIDERED NECESSARY
PRECAUTIONARY MEASURES

- Avoid prolonged breathing of vapor, mist, or gas.
- Workers should wash exposed skin several times daily with soap and water.

FIRST AID

Eye Contact:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin Contact:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Note to Physician:

None

FIRE

In case of fire, use water spray, dry chemical, foam or carbon dioxide.
Water may cause frothing. Use water spray to cool fire-exposed containers.

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N.D. - NOT DETERMINED

N.A. - NOT APPLICABLE

N.T. - NOT TESTED

< - LESS THAN

> - GREATER THAN

PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

PRODUCT LABEL (CONT)

Label Date: 12-08-95

If more than 6,218,905 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)).

Chemical Name	CAS Number	Range in %
---------------	------------	------------

# Solvent deasphalted residual oil	64741-95-3	65.00-79.99
# Solvent dewaxed, heavy paraffinic petroleum distillate	64742-65-0	20.00-34.99

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Pennsylvania Special Hazardous Substance(s)	CAS Number	Range in %
---	------------	------------

None

HMIS

NFPA

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0

Flammability: 1 Special: - Flammability: 1 Special: -

Transportation

DOT:

Proper Shipping Name:

Not regulated

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

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N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324
NAME: MEROPA 320

Date Issued: 12/08/95
Supersedes: 09/15/95

PRODUCT LABEL (CONT)

Label Date: 12-08-95

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

TRANSPORTATION EMERGENCY Company: (914) 831-3400

CHEMTREC: (800) 424-9300

HEALTH EMERGENCY Company: (914) 831-3400

TEXACO
MATERIAL SAFETY DATA SHEET

This MSDS was printed utilizing access to Texaco's CD-ROM MSDS Database.
Due to variations in printer dependent character styles, fonts and computer
control codes, the appearance may differ from that of the centrally printed
Texaco MSDS.

NOTE: Read and understand Material Safety Data Sheet before handling or
disposing of product.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

Product Code and Name:

W2325 MEROPA 460

Chemical Name and/or Family or Description:

Gear Oils

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

Telephone Numbers:

Transportation Emergency-Company : (914) 831-3400

CHEMTREC : (800) 424-9300

Health Emergency -Company : (914) 831-3400

General MSDS Assistance : (914) 838-7204

Technical Information -Fuels : (914) 838-7336

-Chemical : (512) 459-6543

-Lubricant/: (800) 782-7852

Antifreezes

-Additives : (713) 235-6278

-Solvents : (800) 876-3738

----- PAGE: 1-----

N.D. - NOT DETERMINED

N.A. - NOT APPLICABLE

N.T. - NOT TESTED

< - LESS THAN

> - GREATER THAN

PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

COMPOSITION/INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION.

Product and/or Component(s) Carcinogenic According to:

OSHA IARC NTP OTHER NONE

X

Composition: (Sequence Number and Chemical Name)

Seq.	Chemical Name	CAS Number	Range in %
------	---------------	------------	------------

01 #	Solvent deasphalted residual oil	64741-95-3	80.00-94.99
------	----------------------------------	------------	-------------

02 #	Solvent dewaxed, heavy paraffinic petroleum distillate	64742-65-0	3.00-9.99
------	--	------------	-----------

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Exposure Limits referenced by Sequence Number in the Composition Section

Seq. Limit

01	5	mg/m3 TWA-OSHA (MINERAL OIL MIST)
	5	mg/m3 TWA-ACGIH (MINERAL OIL MIST)
01	10	mg/m3 STEL ACGIH (MINERAL OIL MIST)
02	5	mg/m3 TWA-OSHA (MINERAL OIL MIST)
02	5	mg/m3 TWA-ACGIH (MINERAL OIL MIST)
02	10	mg/m3 STEL ACGIH (MINERAL OIL MIST)

PAGE: 2

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance:

Dark red liquid

Odor:

Not determined

WARNING STATEMENT

NONE CONSIDERED NECESSARY

HMIS

NFPA

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0

Flammability: 1 Special : - Flammability: 1 Special : -

POTENTIAL HEALTH EFFECTS

EYE SKIN INHALATION INGESTION

Primary Route of Exposure: X X X

EFFECTS OF OVEREXPOSURE

Acute:

Eyes:

May cause minimal irritation, experienced as temporary discomfort.

Skin:

Brief contact is not irritating. Prolonged contact, as with clothing wetted with material, may cause defatting of skin or irritation, seen as local redness with possible mild discomfort.

Other than the potential skin irritation effects noted above, acute (short term) adverse effects are not expected from brief skin contact; see other effects, below, and Section 11 for information regarding potential long term effects.

Inhalation:

Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness.

----- PAGE: 3 -----

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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

HAZARD IDENTIFICATION (CONT)

Ingestion:

If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.

Sensitization Properties:

Unknown.

Chronic:

No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure:

Because of its defatting properties, prolonged and repeated skin contact may aggravate an existing dermatitis (skin condition).

Other Remarks:

None

4. FIRST AID MEASURES

Eyes:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

PAGE: 4

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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

FIRST AID MEASURES (CONT)

Other Instructions:

Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Ignition Temperature - AIT (degrees F):

Not determined.

Flash Point (degrees F):

475 (COC)

Flammable Limits (%):

Lower: Not determined.

Upper: Not determined.

Recommended Fire Extinguishing Agents And Special Procedures:

Use water spray, dry chemical, foam, or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

Unusual or Explosive Hazards:

None

Special Protective Equipment for Firefighters:

No special equipment or procedures required.

6. ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:

Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

----- PAGE: 5-----

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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

If more than 6,218,905 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)).

7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Minimum feasible handling temperatures should be maintained.

Storage:

Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water.

Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Adequate to meet component occupational exposure limits (see Section 2).

Exposure Limit for Total Product:

None established for product; refer to Section 2 for component exposure limits.

----- PAGE: 6 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Dark red liquid

Odor:

Not determined

Boiling Point (degrees F):

Not determined.

Melting/Freezing point (degrees F):

Not determined.

Specific Gravity (water=1):

.903

pH of undiluted product:

Not applicable.

Vapor Pressure:

Not determined.

Viscosity:

450 cSt at 40.0 C

VOC Content:

Not determined.

Vapor Density (air=1):

Not determined.

Solubility in Water (%):

Not determined.

Other: None

----- PAGE: 7 -----

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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

STABILITY AND REACTIVITY

This Material Reacts Violently With:

(If Others is checked below, see comments for details)

Air Water Heat Strong Oxidizers Others None of These

X

Comments:

None

Products Evolved When Subjected to Heat or Combustion:

Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones.

Hazardous Polymerizations: DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION(ANIMAL TOXICITY DATA)

Median Lethal Dose

Oral:

LD50 Believed to be > 5.00 g/kg (rat) practically non-toxic

Inhalation:

Not determined.

Dermal:

LD50 Believed to be > 2.00 g/kg (rabbit) practically non-toxic

Irritation Index, Estimation of Irritation (Species)

Skin:

(Draize) Believed to be < .50 /8.0 (rabbit) no appreciable effect

Eyes:

(Draize) Believed to be < 15.00 /110 (rabbit) no appreciable effect

Sensitization:

Not determined.

Other:

None

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PRODUCT CODE: W2325
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Date Issued: 12/08/95
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DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form.

Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Remarks

None

13. TRANSPORT INFORMATION

Transportation

DOT:

Proper Shipping Name:

Not regulated

IMDG:

Proper Shipping Name:

Not evaluated

ICAO:

Proper Shipping Name:

Not evaluated

TDG:

Proper Shipping Name:

Not evaluated

14. REGULATORY INFORMATION

Federal Regulations:

SARA Title III:

Section 302/304 Extremely Hazardous Substances

Seq. Chemical Name	CAS Number	Range in %
--------------------	------------	------------

None

PAGE: 9

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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
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REGULATORY INFORMATION (CONT)

Section 302/304 Extremely Hazardous Substances (CONT)

Seq. TPQ RQ

None

Section 311 Hazardous Categorization:

Acute Chronic Fire Pressure Reactive N/A
X

Section 313 Toxic Chemical

Chemical Name CAS Number Concentration

None

CERCLA 102(a)/DOT Hazardous Substances: (+ indicates DOT Hazardous Substance)

Seq. Chemical Name CAS Number Range in %

01+ Toluene 108-88-3 0.01-0.09

CERCLA/DOT Hazardous Substances (Sequence Numbers and RQ's):

Seq. RQ

01+ 1000

TSCA Inventory Status:

This product, or its components, are listed on or are exempt from the
Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

Other:

Not evaluated.

State Regulations:

California Proposition 65:

The following detectable components of this product are substances,
or belong to classes of substances, known to the State of California
to cause cancer and/or reproductive toxicity.

Chemical Name CAS Number

Toluene 108-88-3

States Right-to-know Regulations:

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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

REGULATORY INFORMATION (CONT)

Chemical Name	State Right-to-know
---------------	---------------------

Toluene	CT,FL,IL,MA,NJ,PA,RI,MI
Isopropyl alcohol	CT,FL,IL,MA,NJ,PA,RI

State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan),
LA (Louisiana), MA (Massachusetts), NJ (New Jersey),
PA (Pennsylvania), RI (Rhode Island)

International Regulations:

Export Notification (TSCA-12b):

This product may be subject to export notification under TSCA
section 12(b); contains:

Isopropyl alcohol

WHMIS Classification:

Not regulated

Canada Inventory Status:

Not determined.

EINECS Inventory Status:

Not determined.

Australia Inventory Status:

Not determined.

Japan Inventory Status:

Not determined.

15. ENVIRONMENTAL INFORMATION

Aquatic Toxicity:

Not determined.

Mobility:

Not determined.

Persistence and Biodegradability:

Not determined.

PAGE: 11

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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

ENVIRONMENTAL INFORMATION (CONT)

Potential to Bioaccumulate:

Not determined.

Remarks:

None

16. OTHER INFORMATION

Definitions of Terms:

OSHA - Occupational Safety and Health Administration (a regulatory and enforcement agency of safety and health in most United States industrial sectors; part of the United States Department of Labor.

PEL - Permissible Exposure Limit, OSHA workplace exposure limits for hazardous materials.

IARC - International Agency for Research on Cancer (part of the World Health Organization).

NTP - National Toxicology Program (overseen by the United States Department of Health and Human Services), develops tests for public health regulation of toxic chemicals.

ACGIH - American Conference of Government Industrial Hygienists, develops recommended exposure limits for chemical substances and physical agents.

TLV - Threshold Limit Value, ACGIH term for the airborne concentration of a material to which nearly all healthy workers can be exposed without adverse effects.

TLV-STEL- Short-term exposure limit, for brief exposure. (15 minutes)

TLV-TWA- Time weighted average concentration, for longer exposure. (8 hours)

HMIS - Hazardous Materials Identification System, developed by the National Paint and Coatings Association; numbers assigned to indicate the degree of hazard, with 0 for least severe to 4 for most severe.

NFPA - National Fire Protection Association (an international organization to promote fire prevention); a hazard rating system similar to HMIS.

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PAGE: 12

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PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

OTHER INFORMATION (CONT)

ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN. TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date: 12-08-95 New X Revised, Supersedes: 09-15-95

Inquiries regarding MSDS should be directed to:

Texaco Inc.

Manager, Product Safety

P.O. Box 509

Beacon, N.Y. 12508

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

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< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

PRODUCT LABEL

Label Date: 12-08-95

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

W2325 MEROPA 460

WARNING STATEMENT

NONE CONSIDERED NECESSARY
PRECAUTIONARY MEASURES

- Avoid prolonged breathing of vapor, mist, or gas.
- Workers should wash exposed skin several times daily with soap and water.

FIRST AID

Eye Contact:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin Contact:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Note to Physician:

None

FIRE

In case of fire, use water spray, dry chemical, foam or carbon dioxide. Water may cause frothing. Use water spray to cool fire-exposed containers.

----- PAGE: 14 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

PRODUCT LABEL (CONT)

Label Date: 12-08-95

If more than 6,218,905 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)).

Chemical Name	CAS Number	Range in %
---------------	------------	------------

# Solvent deasphalted residual oil	64741-95-3	80.00-94.99
# Solvent dewaxed, heavy paraffinic petroleum distillate	64742-65-0	3.00-9.99

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Pennsylvania Special Hazardous Substance(s)	CAS Number	Range in %
---	------------	------------

None

HMIS

NFPA

Health: 0	Reactivity: 0	Health: 0	Reactivity: 0
Flammability: 1	Special :-	Flammability: 1	Special :-

Transportation

DOT:

Proper Shipping Name:

Not regulated

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

PAGE: 15

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2325
NAME: MEROPA 460

Date Issued: 12/08/95
Supersedes: 09/15/95

7. PRODUCT LABEL (CONT)

Label Date: 12-08-95

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

TRANSPORTATION EMERGENCY Company: (914) 831-3400

CHEMTREC: (800) 424-9300

HEALTH EMERGENCY Company: (914) 831-3400

TEXACO
MATERIAL SAFETY DATA SHEET

This MSDS was printed utilizing access to Texaco's CD-ROM MSDS Database. Due to variations in printer dependent character styles, fonts and computer control codes, the appearance may differ from that of the centrally printed Texaco MSDS.

NOTE: Read and understand Material Safety Data Sheet before handling or disposing of product.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

Product Code and Name:

W0715 REGAL OIL R&O 150

Chemical Name and/or Family or Description:

Turbine Oils

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

Telephone Numbers:

Transportation Emergency-Company : (914) 831-3400

CHEMTREC : (800) 424-9300

Health Emergency -Company : (914) 831-3400

General MSDS Assistance : (914) 838-7204

Technical Information -Fuels : (914) 838-7336

-Chemical : (512) 459-6543

-Lubricant/: (800) 782-7852

Antifreezes

-Additives : (713) 235-6278

-Solvents : (800) 876-3738

----- PAGE: 1-----

N.D. - NOT DETERMINED

N.A. - NOT APPLICABLE

N.T. - NOT TESTED

< - LESS THAN

> - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

COMPOSITION/INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION.

Product and/or Component(s) Carcinogenic According to:

OSHA IARC NTP OTHER NONE

X

Composition: (Sequence Number and Chemical Name)

Seq.	Chemical Name	CAS Number	Range in %
------	---------------	------------	------------

01 #	Solvent dewaxed, heavy paraffinic petroleum distillate	64742-65-0	65.00-79.99
------	--	------------	-------------

02 #	Solvent deasphalted residual oil	64741-95-3	20.00-34.99
------	----------------------------------	------------	-------------

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Exposure Limits referenced by Sequence Number in the Composition Section

Seq. Limit

01	5	mg/m3 TWA-OSHA (MINERAL OIL MIST)
	5	mg/m3 TWA-ACGIH (MINERAL OIL MIST)
01	10	mg/m3 STEL ACGIH (MINERAL OIL MIST)
02	5	mg/m3 TWA-OSHA (MINERAL OIL MIST)
02	5	mg/m3 TWA-ACGIH (MINERAL OIL MIST)
02	10	mg/m3 STEL ACGIH (MINERAL OIL MIST)

----- PAGE: 2 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance:
Light pale liquid
Odor:
Not determined

WARNING STATEMENT

NONE CONSIDERED NECESSARY
HMIS NFPA

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0
Flammability: 1 Special : - Flammability: 1 Special : -

POTENTIAL HEALTH EFFECTS

EYE SKIN INHALATION INGESTION

Primary Route of Exposure: X X X

EFFECTS OF OVEREXPOSURE

Acute:
Eyes:
May cause minimal irritation, experienced as temporary discomfort.
Skin:
Brief contact is not irritating. Prolonged contact, as with clothing wetted with material, may cause defatting of skin or irritation, seen as local redness with possible mild discomfort.
Other than the potential skin irritation effects noted above, acute (short term) adverse effects are not expected from brief skin contact; see other effects, below, and Section 11 for information regarding potential long term effects.
Inhalation:
Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness.

PAGE: 3

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

HAZARD IDENTIFICATION (CONT)

Ingestion:

If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.

Sensitization Properties:

Unknown.

Chronic:

No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure:

Because of its defatting properties, prolonged and repeated skin contact may aggravate an existing dermatitis (skin condition).

Other Remarks:

Material from high pressure equipment, pinhole leaks, or high pressure line failure can penetrate the skin and, if not properly treated, can cause severe injury, including disfigurement, loss of function, or even require amputation of the affected area. To prevent such serious injury, immediate medical attention should be sought even if the injection injury appears to be minor.

4. FIRST AID MEASURES

Eyes:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

----- PAGE: 4 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

FIRST AID MEASURES (CONT)

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air.
Get medical attention if breathing becomes difficult or respiratory irritation persists.

Other Instructions:

High pressure injection of material can cause severe injury. Failure to debride the wound of all residual material can result in disfigurement, loss of function, or may require amputation of the affected area.
Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Ignition Temperature - AIT (degrees F):

Not determined.

Flash Point (degrees F):

460 (COC)

Flammable Limits (%):

Lower: Not determined.

Upper: Not determined.

Recommended Fire Extinguishing Agents And Special Procedures:

Use water spray, dry chemical, foam, or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

Unusual or Explosive Hazards:

None

Special Protective Equipment for Firefighters:

No special equipment or procedures required.

----- PAGE: 5-----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:
Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Minimum feasible handling temperatures should be maintained.

Storage:

Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water.

Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Adequate to meet component occupational exposure limits (see Section 2).

----- PAGE: 6 -----

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PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

EXPOSURE CONTROLS/PERSONAL PROTECTION (CONT)

Exposure Limit for Total Product:

None established for product; refer to Section 2 for component exposure limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Light pale liquid

Odor:

Not determined

Boiling Point (degrees F):

Not determined.

Melting/Freezing point (degrees F):

Not applicable.

Specific Gravity (water=1):

.8843

pH of undiluted product:

Not applicable.

Vapor Pressure:

Not determined.

Viscosity:

141.5 cSt at 40.0 C

VOC Content:

Not determined.

Vapor Density (air=1):

Not determined.

Solubility in Water (%):

Not determined.

Other: None

----- PAGE: 7 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

STABILITY AND REACTIVITY

This Material Reacts Violently With:

(If Others is checked below, see comments for details)

Air Water Heat Strong Oxidizers Others None of These
X

Comments:

None

Products Evolved When Subjected to Heat or Combustion:

Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones.

Hazardous Polymerizations: DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION(ANIMAL TOXICITY DATA)

Median Lethal Dose

Oral:

LD50 Similar product > 10.00 g/kg (rat) practically non-toxic

Inhalation:

Not determined.

Dermal:

LD50 Similar product > 8.00 g/kg (rabbit) practically non-toxic

Irritation Index, Estimation of Irritation (Species)

Skin:

(Draize) Similar product .13 /8.0 (rabbit) no appreciable effect

Eyes:

(Draize) Similar product 2.33 /110 (rabbit) no appreciable effect

Sensitization:

Not determined.

Other:

None

----- PAGE: 8 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form.

Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Remarks

None

13. TRANSPORT INFORMATION

Transportation

DOT:

Proper Shipping Name:

Not regulated

IMDG:

Proper Shipping Name:

Not evaluated

ICAO:

Proper Shipping Name:

Not evaluated

TDG:

Proper Shipping Name:

Not evaluated

14. REGULATORY INFORMATION

Federal Regulations:

SARA Title III:

Section 302/304 Extremely Hazardous Substances

Seq. Chemical Name	CAS Number	Range in %
--------------------	------------	------------

None

----- PAGE: 9 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

REGULATORY INFORMATION (CONT)

Section 302/304 Extremely Hazardous Substances (CONT)

Seq. TPQ RQ

None

Section 311 Hazardous Categorization:

Acute Chronic Fire Pressure Reactive N/A
X

Section 313 Toxic Chemical

Chemical Name CAS Number Concentration

None

CERCLA 102(a)/DOT Hazardous Substances: (+ indicates DOT Hazardous Substance)

Seq. Chemical Name CAS Number Range in %

None

CERCLA/DOT Hazardous Substances (Sequence Numbers and RQ's):

Seq. RQ

None

TSCA Inventory Status:

This product, or its components, are listed on or are exempt from the
Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

Other:

Not evaluated.

State Regulations:

California Proposition 65:

The following detectable components of this product are substances,
or belong to classes of substances, known to the State of California
to cause cancer and/or reproductive toxicity.

Chemical Name CAS Number

None

States Right-to-know Regulations:

PAGE: 10

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

REGULATORY INFORMATION (CONT)

Chemical Name	State Right-to-know
---------------	---------------------

None

State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan),
LA (Louisiana), MA (Massachusetts), NJ (New Jersey),
PA (Pennsylvania), RI (Rhode Island)

International Regulations:
WHMIS Classification:
Not regulated
Canada Inventory Status:
Not determined.
EINECS Inventory Status:
Not determined.
Australia Inventory Status:
Not determined.
Japan Inventory Status:
Not determined.

15. ENVIRONMENTAL INFORMATION

Aquatic Toxicity:
Not determined.
Mobility:
Not determined.
Persistence and Biodegradability:
Not determined.
Potential to Bioaccumulate:
Not determined.

----- PAGE: 11 -----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

ENVIRONMENTAL INFORMATION (CONT)

Remarks:
None

16. OTHER INFORMATION

Definitions of Terms:

OSHA - Occupational Safety and Health Administration (a regulatory and enforcement agency of safety and health in most United States industrial sectors; part of the United States Department of Labor.

PEL - Permissible Exposure Limit, OSHA workplace exposure limits for hazardous materials.

IARC - International Agency for Research on Cancer (part of the World Health Organization).

NTP - National Toxicology Program (overseen by the United States Department of Health and Human Services), develops tests for public health regulation of toxic chemicals.

ACGIH - American Conference of Government Industrial Hygienists, develops recommended exposure limits for chemical substances and physical agents.

TLV - Threshold Limit Value, ACGIH term for the airborne concentration of a material to which nearly all healthy workers can be exposed without adverse effects.

TLV-STEL- Short-term exposure limit, for brief exposure. (15 minutes)

TLV-TWA- Time weighted average concentration, for longer exposure.(8 hours)

HMIS - Hazardous Materials Identification System, developed by the National Paint and Coatings Association; numbers assigned to indicate the degree of hazard, with 0 for least severe to 4 for most severe.

NFPA - National Fire Protection Association (an international organization to promote fire prevention); a hazard rating system similar to HMIS.

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT FOR PURPOSE OF HAZARD COMMUNICATION AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

----- PAGE: 12-----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

OTHER INFORMATION (CONT)

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date: 12-08-95 New X Revised, Supersedes: 09-15-95

Inquiries regarding MSDS should be directed to:

Texaco Inc.
Manager, Product Safety
P.O. Box 509
Beacon, N.Y. 12508

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

PAGE: 13

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

PRODUCT LABEL

Label Date: 12-08-95

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

W0715 REGAL OIL R&O 150

WARNING STATEMENT

NONE CONSIDERED NECESSARY
PRECAUTIONARY MEASURES

- Avoid prolonged breathing of vapor, mist, or gas.
- Workers should wash exposed skin several times daily with soap and water.

FIRST AID

Eye Contact:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin Contact:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Note to Physician:

High pressure injection of material can cause severe injury. Failure to debride the wound of all residual material can result in disfigurement, loss of function, or may require amputation of the affected area.

FIRE

In case of fire, use water spray, dry chemical, foam or carbon dioxide.
Water may cause frothing. Use water spray to cool fire-exposed containers.

PAGE: 14

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715
NAME: REGAL OIL R&O 150

Date Issued: 12/08/95
Supersedes: 09/15/95

PRODUCT LABEL (CONT)

Label Date: 12-08-95

Chemical Name	CAS Number	Range in %
---------------	------------	------------

# Solvent dewaxed, heavy paraffinic petroleum distillate	64742-65-0	65.00-79.99
--	------------	-------------

# Solvent deasphalted residual oil	64741-95-3	20.00-34.99
------------------------------------	------------	-------------

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Pennsylvania Special Hazardous Substance(s)	CAS Number	Range in %
---	------------	------------

None

HMIS

NFPA

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0

Flammability: 1 Special: - Flammability: 1 Special: -

Transportation

DOT:

Proper Shipping Name:

Not regulated

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

TRANSPORTATION EMERGENCY Company: (914) 831-3400

CHEMTREC: (800) 424-9300

HEALTH EMERGENCY Company: (914) 831-3400

MATERIAL SAFETY DATA SHEET

VERSION DATE 1/3/96

WELCO 1620 ANTI SPATTER

PRINT DATE 1/3/96

SECTION 1 PRODUCT IDENTIFICATION
 COMPANY NAME WHO SENT MSDS HARRIS WELCO. DIV. OF J.W. HARRIS CO., INC.
 COMPANY ADDRESS 1051 YORK RD
 KINGS MOUNTAIN, NC 28086
 EMERGENCY PHONE NUMBER (800)-424-6300
 MSDS VERSION NUMBER 4
 TRADE NAME WELCO 1620 ANTI SPATTER
 HAZARD RATING (HMS) HEALTH-3
 REACTIVITY-1
 FLAMMABILITY-1
 OTHER-2
 HMS DESIGNATED KEY 4-SEVERE HAZARD
 3-SERIOUS HAZARD
 2-MODERATE HAZARD
 1-SLIGHT HAZARD
 0-MINIMAL HAZARD

SECTION 2 HAZARDOUS COMPONENTS

MATERIAL	% BY WEIGHT	CAS NUMBER	ACGHI TLV (MMD)	SEC 312
METHYLENE CHLORIDE	73-94	75-08-2	50 PPM (BxTWA)	YES
CARBON DIOXIDE	17	124-38-9	5000PPM	NO

SECTION 3 PHYSICAL PROPERTIES
 BOILING POINT 104F
 MELTING POINT NA
 VAPOR PRESSURE 360 (MMHG)
 VAPOR DENSITY (AIR=1) 2.9 (AIR =1)
 SOLUBILITY IN WATER % BY WEIGHT 1.3
 SPECIFIC GRAVITY 1.32 (H2O = 1)
 EVAPORATION RATE 1450 (BUTHY ACETATE = 1)
 APPEARANCE AND ODOR CLEAR, COLORLESS LIQUID, CHARACTERISTIC ODOR.

SECTION 4 FIRE AND EXPLOSION DATA
 FLASH POINT (METHOD USED) NONE TO BOILING
 EXTINGUISHING MEDIA DRY CHEMICAL, CARBON DIOXIDE, OR FOAM
 SPECIAL PROCEDURES PRESSURE DEMAND, SELF CONTAINED RESPIRATORY PROTECTION
 SHOULD BE PROVIDED TO FIRE FIGHTERS
 UNUSUAL HAZARDS STORAGE CONTAINERS EXPOSED TO FIRE SHOULD BE KEPT COOL. AT
 HIGH TEMPERATURES, OVER-PRESSURIZATION OF CONTAINER CAN
 RESULT IN FIRE. VAPORS ARE HEAVIER THAN AIR AND MAY
 ACCUMULATE IN LOW AREAS.

SECTION 5 REACTIVITY DATA
 STABILITY STABLE
 CONDITIONS TO AVOID HIGH PRESSURE IN ALUMINUM SYSTEMS. AVOID OPEN FLAMES OR
 ELECTRICAL ARCS.
 HAZARDOUS POLYMERIZATION WILL NOT OCCUR
 INCOMPATIBILITY AVOID CONTACT WITH OXYGEN, NITROGEN, PEROXIDE, OXIDIZERS AND
 REACTIVE METALS (I.E. ALUMINUM, POTASSIUM, SODIUM, ETC.)
 HAZARDOUS DECOMPOSITION PRODUCTS COMBUSTION MAY YIELD CO, CO2, PHOSGENE AND OR HCL.

SECTION 6 HEALTH HAZARD DATA
 ROUTES OF ENTRY INHALATION, SKIN, INGESTION
 HEALTH HAZARDS ACUTE EXCESSIVE INHALATION AND INGESTION MAY PRODUCE
 SYMPTOMS OF LIGHT HEADEDNESS TO UNCONSCIOUSNESS TO
 DEATH. EXPOSURE OF SKIN AND EYE MAY PRODUCE IRRITATION.
 CHRONIC HEADACHE, FATIGUE, NAUSEA, DEPRESSION AND VISUAL
 DISTURBANCE. HIGH LEVELS MAY CAUSE CARDIAC ARRHYTHMIAS.
 EXCESSIVE EXPOSURE MAY CAUSE IRRITATION TO UPPER
 RESPIRATORY TRACT. EXCESSIVE EXPOSURE MAY ALSO CAUSE
 CARBOXYHEMOGLOBINEMIA.
 CARCINOGENICITY THE STATE OF CALIFORNIA REQUIRES THE FOLLOWING INFORMATION:
 WARNING: THIS PRODUCTS CONTAINS A CHEMICAL KNOWN TO THE
 STATE OF CALIFORNIA TO CAUSE CANCER
 SIGNS & SYMPTOMS OF EXPOSURE LIGHT HEADEDNESS AND NAUSEA. IRRITATING TO SKIN AND EYES.
 MEDICAL CONDITIONS FROM EXPOSURE PROLONGED CONTACT WITH HIGH CONCENTRATIONS CAN LEAD TO
 SERIOUS KIDNEY AND LIVER DAMAGE.

MATERIAL SAFETY DATA SHEET

Identity: Eyesaline Solution - Part #'s 1050, 400, 401, 500, 501, 502, 504, 505, 506, 507, 508, 510, 512, 520, 533, 534				
Section I				
Manufacturer: Fendall Company		Emergency Telephone: 847-577-7400		
Address: 5 East College Drive Arlington Heights, IL 60004		Information Telephone: 800-543-4842		
		Date Prepared: 01/22/96		
Section II - Hazardous Ingredients/Identity Information				
Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other limits recommended	% (optional)
BENZALKONIUM CHLORIDE CAS#8001-54-5	NONE	NONE	N/A	<0.1%
Section III - Physical/Chemical Characteristics				
Boiling Point: 212° F (100° C)		Specific Gravity (H₂O)=1: NOT DETERMINED		
Vapor Pressure (mm Hg.): 760		Melting Point: N/A		
Vapor Density (Air = 1): NOT DETERMINED		Evaporation Rate (Butyl Acetate = 1): NOT DETERMINED		
Solubility in Water: 100%				
Appearance and Odor: COLORLESS LIQUID WITH NO DISCERNABLE ODOR.				
Section IV - Fire and Explosion Hazard Data				
Flash Point (Method Used): N/A		Flammable Limits:	LEL: N/A	UEL: N/A
Extinguishing Media: THIS IS A NONFLAMMABLE AQUEOUS SOLUTION				
Special Fire Fighting Procedures: N/A				
Unusual Fire and Explosion Hazards: N/A				
Section V - Reactivity Data				
Stability	Unstable: NO Stable: YES	Conditions to Avoid: THIS PRODUCT IS STABLE CONSIDERED NON-REACTIVE AND STABLE UNDER NORMAL CONDITIONS OF STORAGE AND USAGE.		
Incompatibility (Materials to Avoid): NONE KNOWN				
Hazardous Decomposition or Byproducts: NONE				
Hazardous Polymerization	May Occur: NO Will Not Occur: YES	Conditions to Avoid: NONE		
Section VI - Health Hazard Data				
Route(s) of Entry: Inhalation? NO Skin? NO Ingestion? YES				
Health Hazards (Acute and Chronic): INGESTION OF VOLUMES IN EXCESS OF 20 LITERS MAY CAUSE GASTRIC IRRITATION				
Carcinogenicity: NTP? NO IARC Monographs? NO OSHA Regulated? NO				
Signs and Symptoms of Exposure: N/A				
Medical Conditions Generally Aggravated by Exposure: N/A				
Emergency First Aid Procedures: NOTES TO PHYSICIAN: IN THE UNLIKELY EVENT OF RAPID INGESTION OF LARGE VOLUMES OF THE SOLUTION, INDUCE VOMITING AND OBSERVE THE PATIENT FOR GASTRIC IRRITATION.				
Section VII - Precautions for Safe Handling and Use				
Steps to Be Taken in Case Material is Released or Spilled: FLUSH AREA WITH WATER. THE SOLUTION IS NOT RCRA HAZARDOUS WASTE				
Waste Disposal Method: N/A				
Precautions to Be Taken in Handling and Storing: DO NOT FREEZE OR EXPOSE TO TEMPERATURES IN EXCESS OF 110° F (43° C) FOR EXTENDED PERIODS				
Other Precautions: N/A				
Section VIII - Control Measures				
Respiratory Protection: N/A				
Ventilation	Local Exhaust: N/A		Special: N/A	
	Mechanical: N/A		Other: N/A	
Protective Gloves: N/A		Eye Protection: N/A		
Other Protective Clothing: N/A				
Work Hygienic Practices: N/A				

National Sanitary Supply Co.
P.O. Box 81126
Los Angeles, Ca 90061
(213) 770-1970

5/21/96
2813 TONCHY, TALAL

193150

ASH GROVE CEMENT WEST, INC.
13939 N RIVERGATE BLVD
PORTLAND OR 97203-6608

Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal OSHA Hazard Communication Final Standard 29 CFR 1910.1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnesses in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias
Executive Administration

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061

MANUFACTURER:
3M CENTER
ST. PAUL, MN 55144-1000
PHONE NO. 612-733-1110

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: 3M BRAND NEUTRAL CLEANER CONCENTRATE Date Issued: 11/14/94
Supercedes: NEW
National Item#: 9654XX

SECTION 2. INGREDIENTS	CAS NUMBER	PERCENT
WATER	7732-18-5	30 - 60
HYDROXYALKYL AMINE OXIDES	68478-65-9	30 - 60
ISOPROPYL ALCOHOL	67-63-0	5 - 10
2-ETHYL-HEXYLOXYETHANOL	1559-35-9	5 - 10

Note: IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL OR CHEMICALS SUBJECT TO REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-ACT OF 1986 AND 40CFR PART 372.
2-ETHYL-HEXYLOXYETHANOL
N/A = NOT APPLICABLE; N/D = NOT DETERMINED

SECTION 3. PHYSICAL DATA

Boiling Point (F): N/D Specific Gravity: CA 1.0 WATER = 1
Vapor Pressure: N/D Percent Volatile: CA 75%
or Density: N/D Evaporation Rate (=1): N/D
Solubility in Water: COMPLETE pH: CA 8
Volatile Organics: CA 15% VOC less H₂O & Exempt Solvent: CA 15%
Viscosity: < 100 CPS Melting Point: N/D
Appearance and Odor: LIQUID, GREEN COLOR; PLEASANT FRAGRANCE

Section 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point: CA 102 F
Flammable Limits: N/D LEL= N/D UEL= N/D
Autoignition Temperature: N/D
Extinguishing Media: WATER CARBON DIOXIDE, DRY POWDER, FOAM
Special Fire Fighting Procedures: WEAR FULL PROTECTIVE CLOTHING, INCLUDING HELMET, SELF-CONTAINED, POSITIVE PRESSURE OR PRESSURE DEMAND BREATHING APPARATUS, BUNKER COAT AND PANTS, BANDS AROUND ARMS, WAIST AND LEGS, FACE MASK, AND PROTECTIVE COVERING FOR EXPOSURE AREAS OF THE HEAD.
Unusual Fire and Explosion Hazards: SEE HAZARDOUS DECOMPOSITION SECTION FOR PRODUCTS OF COMBUSTION. CLOSED CONTAINERS EXPOSED TO HEAT FROM FIRE MAY BUILD PRESSURE AND EXPLODE.

NFPA-HAZARD-CODES: HEALTH -2 FIRE -2 REACTIVITY -0
UNUSUAL REACTION HAZARD: NONE
OSHA FIRE HAZARD CLASS: CLASS II COMBUSTIBLE LIQUID

SECTION 5. REACTIVITY DATA

Stability: STABLE

Incompatibility - Materials to Avoid: STRONG OXIDIZING AGENTS.

Hazardous Polymerization: WILL NOT OCCUR

Hazardous Decomposition Products: CARBON MONOXIDE AND CARBON DIOXIDE, OXIDES OF NITROGEN, IRRITANT VAPORS OR GASES.

SECTION 6. ENVIRONMENTAL INFORMATION

Spill Response: REFER TO OTHER SECTIONS OF THIS MSDS FOR INFORMATION REGARDING PHYSICAL AND HEALTH HAZARDS, RESPIRATORY PROTECTION, VENTILATION, AND PERSONAL PROTECTIVE EQUIPMENT. IN THE U.S.A., CALL (612) 733-1110 OR (612) 733-6100 FOR 24-HOUR SPILL ASSISTANCE. CONTAIN SPILL. COLLECT SPILLED MATERIAL.

Recommended Disposal: SMALL QUANTITIES (LESS THAN 5 GAL. (19 L) MAY BE DISCHARGED TO A WASTEWATER TREATMENT SYSTEM.

Environmental Data: A 3M PRODUCT ENVIRONMENTAL DATA SHEET (PED) IS AVAILABLE.

THE USE OF THIS PRODUCT IS EXPECTED TO HAVE NO SIGNIFICANT ENVIRONMENTAL IMPACT. MOST COMPONENTS OF THIS PRODUCT WILL EVENTUALLY DEGRADE IN THE ENVIRONMENT.

Regulatory Information: SINCE REGULATIONS VARY, CONSULT APPLICABLE REGULATIONS OR AUTHORITIES BEFORE DISPOSAL. U.S. EPA HAZARDOUS WASTE NUMBER = D001 (IGNITABLE)

TSCA: ALL COMPONENTS USED IN THE MANUFACTURE OF THIS MATERIAL ARE IN COMPLIANCE WITH THE US TSCA INVENTORY.

EPCRA HAZARD CLASS: FIRE = YES PRESSURE = NO REACTIVITY = NO
ACUTE = YES CHRONIC = YES

SECTION 7. HEALTH HAZARD DATA

Eye Contact: Severe Eye Irritation: SIGNS/SYMPTOMS CAN INCLUDE REDNESS, SWELLING, PAIN, TEARING, CLOUDY APPEARANCE OF THE CORNEA, IMPAIRED VISION AND POSSIBLE PERMANENTLY IMPAIRED VISION.

Skin Contact: Severe Skin Irritation: SIGNS/SYMPTOMS CAN INCLUDE REDNESS, SWELLING, ITCHING, DRYNESS, CRACKING, BLISTERING, AND PAIN.

Inhalation: PROLONGED OR REPEATED EXPOSURE MAY CAUSE:

Central Nervous System Depression: SIGNS/SYMPTOMS CAN INCLUDE HEADACHE, DIZZINESS, DROWSINESS, INCOORDINATION, SLOWED REACTION TIME, SLURRED SPEECH, GIDDINESS AND UNCONSCIOUSNESS.

Irritation (upper respiratory): SIGNS/SYMPTOMS CAN INCLUDE DORENESS OF THE NOSE AND THROAT, COUGHING AND SNEEZING.

If Swallowed: INGESTION IS NOT A LIKELY ROUTE OF EXPOSURE TO THIS PRODUCT.

Ingestion may cause:

Gastrointestinal Effects: SIGNS/SYMPTOMS GENERALLY WILL INCLUDE ABDOMINAL PAIN.

Other Health Hazard Information:

A 3M PRODUCT TOXICITY SUMMARY SHEET IS AVAILABLE.

NATIONAL SAFETY DATA SHEET

PAGE 3

Product Name: 3M BRND NEUTRAL CLEANER CONCENTRATE
Date Issued: 11/14/94
National Item#: 9634

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. GET IMMEDIATE MEDICAL ATTENTION.

Skin Contact: IMMEDIATELY FLUSH SKIN WITH LARGE AMOUNTS OF WATER. REMOVE CONTAMINATED CLOTHING. IF IRRITATION PERSISTS, CALL A PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE REUSE AND DISPOSE OF CONTAMINATED SHOES.

Inhalation: IF SIGNS/SYMPTOMS OCCUR, REMOVE PERSON TO FRESH AIR. IF SIGNS/ SYMPTOMS CONTINUED, CALL A PHYSICIAN.

If Swallowed: DO NOT INDUCE VOMITING. DRINK TWO GLASSES OF WATER. CALL A PHYSICIAN.

SECTION 9. PRECAUTIONARY INFORMATION

Eye Protection: AVOID EYE CONTACT. THE FOLLOWING SHOULD BE WORN ALONE OR IN COMBINATION AS APPROPRIATE, TO PREVENT EYE CONTACT: WEAR VENTED GOGGLES. WEAR FULL-FACE SHIELD.
 **WHEN USED AS DIRECTED, EYE CONTACT WITH THIS MATERIAL IS NOT EXPECTED TO OCCUR.

Skin Protection: AVOID SKIN CONTACT. WEAR APPROPRIATE GLOVES WHEN HANDLING THIS MATERIAL. A PAIR OF GLOVES MADE FROM THE FOLLOWING MATERIAL(S) ARE RECOMMENDED: BUTYL RUBBER. USE ONE OR MORE OF THE FOLLOWING PERSONAL PROTECTION ITEMS AS NECESSARY TO PREVENT SKIN CONTACT: APRON, COVERALLS.
 **WHEN USED AS DIRECTED, SKIN CONTACT WITH THIS MATERIAL IS NOT EXPECTED TO OCCUR.

Ventilation Protection: USE WITH APPROPRIATE LOCAL EXHAUST VENTILATION. PROVIDE APPROPRIATE LOCAL EXHAUST VENTILATION AT TRANSFER POINTS. IF EXHAUST VENTILATION IS NOT ADEQUATE, USE APPROPRIATE RESPIRATORY PROTECTION.

**WHEN USED AS DIRECTED, NO SPECIAL VENTILATION IS REQUIRED.
 Prevention of Accidental Ingestion: DO NOT EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT. WASH EXPOSED AREAS THOROUGHLY WITH SOAP WATER. DO NOT INGEST.

Recommended Storage: STORE AWAY FROM HEAT. KEEP CONTAINER CLOSED WHEN NOT IN USE.

Fire and Explosion Avoidance: KEEP CONTAINER TIGHTLY CLOSED. KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME, AND OTHER SOURCES OF IGNITION. PREVENT ALL SOURCES OF IGNITION.

Other Precautionary Information:
 **NOTE: THIS MATERIAL IS INTENDED TO BE DILUTED ONLY WITH THE 3M TWIST 'N FILL CHEMICAL DISPENSER.

INGREDIENTS	EXPOSURE LIMITS		UNIT	TYPE	AUTH	SKIN*
	VALUE					
WATER	NONE		NONE	NONE	NONE	
HYDROXYALKYL AMINE OXIDES	NONE		NONE	NONE	NONE	
ISOPROPYL ALCOHOL	400		PPH	TWA	ACGIH	
ISOPROPYL ALCOHOL	500		PPH	STEL	ACGIH	
ISOPROPYL ALCOHOL	400		PPH	TWA	OSHA	
ISOPROPYL ALCOHOL	500		PPH	STEL	OSHA	
ETHYL-HEXYLOXYETHANOL	NONE		NONE	NONE	NONE	

(CONTINUED NEXT PAGE)

MATERIAL SAFETY DATA SHEET

Product Name: 3M BRAND NEUTRAL CLEANER CONCENTRATE

Date Issued: 11/26/94

National Item#: 9634

PAGE 4

* Skin Notation: LISTED SUBSTANCES INDICATED WITH "Y" UNDER SKIN REFER TO THE POTENTIAL CONTRIBUTION TO THE OVERALL EXPOSURE BY THE CUTANEOUS ROUTE INCLUDING MUCOUS MEMBRANE AND EYE, EITHER BY AIRBORNE OR, MORE PARTICULARLY BY DIRECT CONTACT WITH THE SUBSTANCE. VEHICLES CAN ALTER SKIN ABSORPTION.

Source of Exposure Limit Data:

- ACGIH: AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
- OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- CMRG: CHEMICAL MANUFACTURE RECOMMENDED GUIDELINES
- NONE: NONE ESTABLISHED

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061

MANUFACTURER:
3M CENTER
ST. PAUL, MN 55144-1000
PHONE NO. 612-733-1110

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: 3M HEAVY DUTY MULTISURFACE
CLEANER CONCENTRATE

Date Issued: 11/14/94
Supersedes: NEW
National Item#: 9633XX

SECTION 2. INGREDIENTS

	CAS NUMBER	PERCENT
1-METHOXY-2-PROPANOL	107-98-2	40 - 70
WATER	7732-18-5	10 - 30
ETHANOLAMINE	141-43-5	10 - 30
HYDROXYALKYL AMINE OXIDES	58478-65-9	10 - 30
ISOPROPYL ALCOHOL	67-63-0	1 - 5
DODECYLBENZENESULFONIC ACID	27176-87-0	1 - 5
2-ETHYL-HEXYLOXYETHANOL	1359-35-9	1 - 5
2-METHOXY-1-PROPANOL	1589-47-5	1 - 5

Note: IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO ACT OF 1986 AND 40 CFR PART 372.
2-ETHYL-HEXYLOXYETHANOL

SECTION 3. PHYSICAL DATA

Boiling Point (F): N/D
Vapor Pressure: N/D
Vapor Density: N/D
Solubility in Water: COMPLETE
Volatile Organics: CA. 55%
Viscosity: CA. 10 CPS
Specific Gravity: CA. 0.978 WATER = 1
Percent Volatile: CA. 95%
Evaporation Rate (=1): N/D
pH: 11.9
VOC less H2O & Exempt Solvent: CA 55%
Melting Point: N/A
Appearance and Odor: LIQUID, COLORLESS TO LIGHT AMBER COLOR, FRESH SCENT

Section 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point: > 105 F T.C.C.
Flammable Limits: N/D LEL= N/D UEL= N/D
Autoignition Temperature: N/D
Extinguishing Media: WATER SPRY, CARBON DIOXIDE, DRY CHEMICAL, FOAM,
ALCOHOL-TYPE FORM
Special Fire Fighting Procedures: WEAR FULL PROTECTIVE CLOTHING, INCLUDING HELMET, SELF-CONTAINED, POSITIVE PRESSURE OR PRESSURE DEMAND BREATHING APPARATUS, BUNKER COAT AND PANTS, BANDS AROUND ARMS, WAIST AND LEGS, FACE MASK, AND PROTECTIVE COVERING FOR EXPOSURE AREAS OF THE HEAD.
Unusual Fire and Explosion Hazards: CLOSED CONTAINERS EXPOSED TO HEAT FROM FIRE MAY BUILD PRESSURE AND EXPLODE.

NFPA-HAZARD-CODES: HEALTH -2 FIRE -2 REACTIVITY -0
UNUSUAL REACTION HAZARD: NONE

OSHA FIRE HAZARD CLASS: CLASS II COMBUSTIBLE LIQUID

SECTION 5. REACTIVITY DATA

Stability: STABLE

Incompatibility - Materials to Avoid: STRONG OXIDIZING AGENTS.

Hazardous Polymerization: WILL NOT OCCUR

Hazardous Decomposition Products: CARBON MONOXIDE AND CARBON DIOXIDE, IRRITANT VAPORS OR GASES.

SECTION 6. ENVIRONMENTAL INFORMATION

Spill Response: OBSERVE PRECAUTIONS FROM OTHER SECTIONS. VENTILATE AREA.
EXTINGUISH ALL IGNITION SOURCES. CONTAIN SPILL. COVER WITH ABSORBENT
MATERIAL.
COLLECT USING NON-SPARKING TOOLS. PLACE IN AN APPROVED METAL CONTAINER
AND SEAL.

Recommended Disposal: INCINERATE IN A PERMITTED HAZARDOUS WASTE INCINERATOR.

Environmental Data: A 3M PRODUCT ENVIRONMENTAL DATA SHEET (PED) IS
AVAILABLE.

THE USE OF THIS PRODUCT IS EXPECTED TO HAVE NO SIGNIFICANT ENVIRONMENTAL
IMPACT. MOST COMPONENTS OF THIS PRODUCT WILL EVENTUALLY DEGRADE IN THE
ENVIRONMENT.

Regulatory Information: SINCE REGULATIONS VARY, CONSULT APPLICABLE
REGULATIONS OR AUTHORITIES BEFORE DISPOSAL. IN THE EVENT OF AN
UNCONTROLLED RELEASE OF THIS MATERIAL, THE USER SHOULD DETERMINE IF THE
RELEASE QUALIFIES AS A REPORTABLE QUANTITY. U.S. EPA HAZARDOUS WASTE
NUMBER = D001 (IGNITABLE)

TSCA: ALL COMPONENTS USED IN THE MANUFACTURE OF THIS MATERIAL ARE IN
COMPLIANCE WITH THE US TSCA INVENTORY.

EPCRA HAZARD CLASS: FIRE = YES PRESSURE = NO REACTIVITY = NO
ACUTE = YES CHRONIC = YES

SECTION 7. HEALTH HAZARD DATA

Contact: CHEMICAL-RELATED EYE BURNS (CHEMICAL CORROSIVITY): SIGNS/
SYMPTOMS CAN INCLUDE CLOUDY APPEARANCE OF THE CORNEA, CHEMICAL BURNS,
PAIN, TEARING, ULCERS, IMPAIRED VISION OR LOSS OF VISION.

Skin Contact: SKIN BURNS (CHEMICAL CORROSIVITY): SIGNS/SYMPTOMS CAN
INCLUDE REDNESS, SWELLING, ITCHING, PAIN, BLISTERING, ULCERATION,
SLOUGHING, AND SCAR FORMATION.
MAY BE ABSORBED THROUGH THE SKIN AND PRODUCT EFFECTS SIMILAR TO THOSE
CAUSED BY INHALATION AND/OR INGESTION.

Prolonged or repeated exposure may cause:
Allergic Skin Reaction: SIGNS/SYMPTOMS CAN INCLUDE REDNESS, SWELLING,
BLISTERING, AND ITCHING.

Inhalation: Single overexposure, above recommended guidelines, may cause:
Central Nervous System Depression: SIGNS/SYMPTOMS CAN INCLUDE HEADACHE,
DIZZINESS, DROWSINESS, INCOORDINATION, SLOWED REACTION TIME, SLURRED
SPEECH, GIDDINESS AND UNCONSCIOUSNESS.

Irritation (upper respiratory): SIGNS/SYMPTOMS CAN INCLUDE SORENESS OF
THE NOSE AND THROAT, COUGHING AND SNEEZING.

WHILE THE FOLLOWING EFFECTS ARE ASSOCIATED WITH ONE OR MORE OF THE
INDIVIDUAL INGREDIENTS IN THIS PRODUCT AND ARE REQUIRED TO BE INCLUDED
ON THE MSDS BY THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THEY ARE
NOT EXPECTED EFFECTS DURING FORESEEABLE USE OF THIS PRODUCT.

Prolonged or repeated overexposure, above recommended guidelines, may cause:

Heart Effects: SIGNS/SYMPTOMS CAN INCLUDE ARRHYTHMIA, HEART ATTACK AND
DEATH.

Kidney Effects: SIGNS/SYMPTOMS CAN INCLUDE REDUCED URINE VOLUME, BLOOD
IN URINE AND BACK PAIN.

Liver Effects: SIGNS/SYMPTOMS CAN INCLUDE YELLOW SKIN (JAUNDICE) AND
TENDERNESS OF UPPER ABDOMEN.

Product Name: 3M BRAND HEAVY DUTY MULTISURFACE CLEANER CONCENTRATE

Date Issued: 11/14/94

National Item#: 9633

Nervous System Effects: SIGNS/SYMPTOMS CAN INCLUDE EMOTIONAL CHANGES, LACK OF COORDINATION, TREMORS AND SENSORY LOSS.

If Swallowed: INGESTION IS NOT A LIKELY ROUTE OF EXPOSURE TO THIS PRODUCT.

Ingestion may cause:

Irritation of Gastrointestinal Issues: SIGNS/ SYMPTOMS CAN INCLUDED PAIN, VOMITING, ABDOMINAL TENDERNESS, NAUSEA, BLOOD IN VOMITUS, AND BLOOD IN FECES.

Aspiration Pneumonitis: SIGNS/SYMPTOMS CAN INCLUDE COUGHING, DIFFICULTY BREATHING, WHEEZING, COUGHING UP BLOOD AND PNEUMONIA, WHICH CAN BE FATAL.

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. GET IMMEDIATE MEDICAL ATTENTION.

Skin Contact: IMMEDIATELY FLUSH SKIN WITH LARGE AMOUNTS OF WATER. REMOVE CONTAMINATED CLOTHING. IF IRRITATION PERSISTS, CALL A PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE REUSE.

Inhalation: IF SIGNS/SYMPTOMS OCCUR, REMOVE PERSON TO FRESH AIR. IF SIGNS/ SYMPTOMS CONTINUE, CALL A PHYSICIAN.

If Swallowed: IF SWALLOWED, CALL A PHYSICIAN IMMEDIATELY. ONLY INDUCE VOMITING AT THE INSTRUCTION OF A PHYSICIAN. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SECTION 9. PRECAUTIONARY INFORMATION

Eye Protection: AVOID EYE CONTACT. THE FOLLOWING SHOULD BE WORN ALONE OR IN COMBINATION, AS APPROPRIATE, TO PREVENT EYE CONTACT: WEAR VENTED GOGGLES. WEAR FULL-FACE SHIELD.

**WHEN USED AS DIRECTED, EYE CONTACT WITH THIS MATERIAL IS NOT EXPECTED TO OCCUR.

Skin Protection: AVOID SKIN CONTACT. WEAR APPROPRIATE GLOVES WHEN HANDLING THIS MATERIAL. A PAIR OF GLOVES MADE FROM THE FOLLOWING MATERIAL(S) ARE RECOMMENDED: BUTYL RUBBER, NEOPRENE, NITRILE RUBBER. USE ONE OR MORE OF THE FOLLOWING PERSONAL PROTECTION ITEMS AS NECESSARY TO PREVENT SKIN CONTACT: APRON, COVERALLS

**WHEN USED AS DIRECTED, SKIN CONTACT WITH THIS MATERIAL IS NOT EXPECTED TO OCCUR.

Ventilation Protection: USE WITH APPROPRIATE LOCAL EXHAUST VENTILATION. PROVIDE APPROPRIATE LOCAL EXHAUST VENTILATION AT TRANSFER POINTS. IF EXHAUST VENTILATION IS NOT ADEQUATE, USE APPROPRIATE RESPIRATORY PROTECTION.

**WHEN USED AS DIRECTED, NO SPECIAL VENTILATION IS REQUIRED.

Respiratory Protection: AVOID BREATHING OF VAPORS, MISTS OR SPRAY. AVOID BREATHING OF AIRBORNE MATERIAL. SELECT ONE OF THE FOLLOWING NIOSH APPROVED RESPIRATORS BASED ON AIRBORNE CONCENTRATION OF CONTAMINANTS AND IN ACCORDANCE WITH OSHA REGULATIONS: FULL-FACE ORGANIC VAPOR RESPIRATOR

**WHEN USED AS DIRECTED, RESPIRATORY PROTECTION IS NOT REQUIRED.
Prevention of Accidental Ingestion: WASH HANDS AFTER HANDLING AND BEFORE EATING.

Recommended Storage: STORE AWAY FROM HEAT. KEEP CONTAINER IN WELL-VENTILATED AREA.

Fire and Explosion Avoidance: KEEP CONTAINER TIGHTLY CLOSED. KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME, AND OTHER SOURCES OF IGNITION. PREVENT ALL SOURCES OF IGNITION. GROUND CONTAINERS SECURELY WHEN TRANSFERRING CONTENTS. WEAR LOW-STATIC OR PROPERLY GROUNDED SHOES. COMBUSTIBLE LIQUID AND VAPOR.

**WHEN USED AS DIRECTED, CONTAINER GROUNDING AND LOW STATIC OR GROUNDED SHOES ARE NOT REQUIRED.
(CONTINUED NEXT PAGE)

MATERIAL SAFETY DATA SHEET

Product Name: 3M BRAND HEAVY DUTY MULTISURFACE CLEANER CONCENTRATE

PAGE 4

Date Issued: 11/14/94

National Item#: 9633

Other Precautionary Information:

**NOTE: THIS MATERIAL IS INTENDED TO BE DILUTED ONLY WITH THE 3M TWIST'N
FILL CHEMICAL DESPENSER.

INGREDIENTS	EXPOSURE LIMITS VALUE	UNIT	TYPE	AUTH	SKIN*
1-METHOXY-2-PROPANOL	100	PPM	TWA	ACGIH	
1-METHOXY-2-PROPANOL	150	PPM	STEL	ACGIH	
1-METHOXY-2-PROPANOL	100	PPM	TWA	OSHA	
1-METHOXY-2-PROPANOL	150	PPM	STEL	OSHA	
WATER	NONE	NONE	NONE	NONE	
ETHANOLAMINE	3	PPM	TWA	ACGIH	
ETHANOLAMINE	6	PPM	STEL	ACGIH	
ETHANOLAMINE	3	PPM	TWA	OSHA	
ETHANOLAMINE	6	PPM	STEL	OSHA	
HYDROXYALKYL AMINE OXIDES	NONE	NONE	NONE	NONE	
ISOPROPYL ALCOHOL	400	PPM	TWA	ACGIH	
ISOPROPYL ALCOHOL	500	PPM	STEL	ACGIH	
ISOPROPYL ALCOHOL	400	PPM	TWA	OSHA	
ISOPROPYL ALCOHOL	500	PPM	STEL	OSHA	
DODECYLBENZENESULFONIC ACID	NONE	NONE	NONE	NONE	
2-ETHYL-HEXYLOXYETHANOL	NONE	NONE	NONE	NONE	
2-METHOXY-1-PROPANOL	NONE	NONE	NONE	NONE	

*Skin Notation: LISTED SUBSTANCES INDICATED WITH "Y" UNDER SKIN REFER TO THE POTENTIAL CONTRIBUTION TO THE OVERALL EXPOSURE BY THE CUTANEOUS ROUTE INCLUDING MUCOUS MEMBRANE AND EYE, EITHER BY AIRBORNE OR, MORE PARTICULARLY, BY DIRECT CONTACT WITH THE SUBSTANCE. VEHICLES CAN ALTER SKIN ABSORPTION.

Source of Exposure Limit Data:

-ACGIH: AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
-OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
-NONE: NONE ESTABLISHED

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

Material Safety Data Sheet

for

Dolomite

Section I - Material Description

Manufacturer's name and address: Ash Grove Cement Company
13939 N. Rivergate Blvd.
Portland, OR 97203

Emergency Telephone Number: (412) 553-4001 - ALCOA
(503) 286-1677 - ASH GROVE

Technical: (412) 553-2881 - ALCOA

Chemical Name & Formula: Dolomite; Mg CO_3 , Silicon Dioxide, SiO_2
Other Designation: None
CAS No: Dolomite (16389-88-1); Silicon Dioxide (7631-86-9)
Manufacturer: Northwest Alloys, P.O. Box 115, Addy, WA 99101
Product Use: Chemical processing

Revised: May 1996

Section II - Hazardous Ingredients and Occupational Exposure Limits

	($<1\%$) <u>% Typical</u>		<u>ACGIH TLV</u>	TWA in mg/mg^3 <u>OSHA PEL</u>
CaCO_3 - MgCO_3	97-100	Amorphous silica	10	6
SiO_2	0-3			
H_2O	Remainder			
LD found for oral route of administration:	SiO_2 (amorphous) 3160 mg/kg			

Section III - Physical Data

Physical Form: Solid
Boiling Temperature: NA
Freeze-Melt Temperature: Not determined
Vapor Pressure: NA
Vapor Density: (Air = 1) NA
Evaporation Rate: NA

Specific Gravity: Not determined
Density: 2.87 g/cc
Water Solubility: Slight
pH: 9.60 [50 % weight (gm) to water volume (ml)]
Color: Grayish-white
Odor: None
Odor Threshold: NA
Coefficient of Water/Oil Distribution: Not determined

Section IV - Fire and Explosion Data

Flashpoint: NA
Auto-Ignition Temperature: NA
Flammability Limits in Air/Upper/Lower: NA

Product is non-combustible. Not an explosion hazard. Use fire extinguishing agent suitable for the surrounding fire. Wear NIOSH approved, self-contained breathing apparatus and protective clothing when appropriate.

Section V - Reactivity Data

Material is stable under normal conditions of use, storage, and transportation.

Section VI - Health Hazard Information

This product has not undergone testing for either acute or chronic toxic effects. However, based on its chemical composition, we would expect it to be a low health risk by inhalation so long as the occupational exposure limits specified under Section II are met.

Section VII - Spill, Leak, and Disposal Procedures

Use dry cleanup procedures; avoid dusting. Collect in containers or bags.

If reuse or recycling is not possible, material may be disposed of at a sanitary landfill.

RCRA Hazardous Waste No. Not Federally Regulated

Section VIII - Special Protection and Precautions

Use with adequate ventilation to meet exposure limits as listed in Section II. Where the exposure limit is or may be exceeded, use NIOSH approved respiratory protections. Select appropriate respirator (dust respirator, etc.) based on the concentrations of actual or potential airborne contaminants present.

Section IX - Regulatory Information

Chemical substance components have been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (Title 40 CFR Part 710).

For purposes of SARA III reporting, this substance contains no ingredients listed on CERCLA, Extremely Hazardous, or 313 lists.

The reportable chemical substances in this product are regulated by the OSHA Hazard Communication Standard (29CFR 1910.1200) solely because they are listed by ACGIH. However, they do not fit any of the five proposed hazard categories under SARA Sections 311,312.

D.O.T. Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated Canadian TDG Hazard Class & PIN - Not Regulated

Section X - References

U.S. Dept. Of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances, 1985-86 Edition

Sax, N. Irving: Dangerous Properties of Industrial Materials, Van Nostrand Reinhold Co. Inc, 1984

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

RECEIVED

JUN 21 1995



Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON Supreme Motor Oil SAE 10W-30

PRODUCT NUMBER(S): CPS220019 CP\$238132

COMPANY IDENTIFICATION

Chevron USA Products Company
Environmental, Safety, and Health
575 Market St.
San Francisco, CA 94105-2856

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)463-7616

PRODUCT INFORMATION: (800)822-5823 MSDS Requests
(800)582-3835 Technical

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The proportion compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

100.0 % CHEVRON Supreme Motor Oil SAE 10W-30

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
------------	--------	-----------	-------------

LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING
> 85.0%

HYDROTREATED DIST., HVY PARA

Revision Number: 5	Revision Date: 03/20/93	MSDS Number: 006469
NDA - No Data Available	NA - Not Applicable	

Prepared according to the OSHA Hazard Communication Standard
(29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology
and Health Risk Assessment Unit, CRTG, P.O. Box 4054, Richmond, CA 94804

X-005051 (06-89)

CHEVRON Supreme Motor Oil SAE 10W-30

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Chemical Name: DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
CAS64742547

5mg/m3 mist	ACGIH TWA
10mg/m3 mist	ACGIH STEL
5mg/m3 mist	OSHA TWA

SOLVENT REFINED DIST., HVY PAR**Chemical Name: DISTILLATES, SOLVENT-REFINED HEAVY PARAFFINIC****CAS64741884**

5 mg/m3 mist	ACGIH TWA
10mg/m3 mist	ACGIH STEL
5 mg/m3 mist	OSHA TWA

SOLVENT DEWAXED DIST., HVY PAR**Chemical Name: DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC****CAS64742650**

5 mg/m3 mist	ACGIH TWA
10 mg/m3 mist	ACGIH STEL
5 mg/m3 mist	OSHA TWA

ADDITIVES INCLUDING THE FOLLOWING

< 15.0%

ZINC ALKYL DITHIOPHOSPHATE**Chemical Name: PHOSPHORODITHIOIC ACID,O,O-DI-C1-14-ALKYL ESTERS, ZINC SALT****CAS68649423**

< 2.0%

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	CPS - CUSA Product Code
CC - Chevron Chemical Company	CAS - Chemical Abstract Service Number

3. HAZARDS IDENTIFICATION**POTENTIAL HEALTH EFFECTS****EYE:**

This substance is not expected to cause prolonged or significant eye irritation.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

Revision Number: 5

Revision Date: 03/20/93

MSDS Number: 004449

NDA - No Data Available

NA - Not Applicable

X-005021 (01-89)

4. FIRST AID MEASURES

EYE:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: (COC) 399F (204) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NDA Upper: NDA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616

ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Revision Number: 5

Revision Date: 03/20/93

MSDS Number: 004469

NDA - No Data Available

NA - Not Applicable

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

ENGINEERING CONTROLS:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Amber liquid.

pH:	NDA
VAPOR PRESSURE:	<0.1 mm Hg @ 20C
VAPOR DENSITY	
(AIR=1):	NA
BOILING POINT:	>600F (316C)
FREEZING POINT:	NDA
MELTING POINT:	NA
SOLUBILITY:	Soluble in hydrocarbon solvents; insoluble in water.
SPECIFIC GRAVITY:	0.88 @15.6/15.6C
DENSITY:	NDA
EVAPORATION RATE:	NA
VISCOSITY:	70.0 cSt @ 40C (Min.)
PERCENT VOLATILE	
(VOL):	NA

Revision Number: 5	Revision Date: 03/20/93	MSDS Number: 004449
NDA - No Data Available	NA - Not Applicable	

X-000021 (01-89)

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as: carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is

Revision Number: 5

Revision Date: 03/20/93

MSDS Number: 004449

NDA - No Data Available

NA - Not Applicable

CHEVRON Supreme Motor Oil SAE 10W-30

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thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE
FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects:	NO
2. Delayed (Chronic) Health Effects:	NO
3. Fire Hazard:	NO
4. Sudden Release of Pressure Hazard:	NO
5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01-SARA 313	11-NJ RTK	21-TSCA Sect 4(e)
02-MASS RTK	12-CERCLA 302.4	22-TSCA Sect 5(a)(e)(f)
03-NTP Carcinogen	13-MN RTK	23-TSCA Sect 6

Revision Number: 5 Revision Date: 03/20/93 MSDS Number: 004449
NDA - No Data Available NA - Not Applicable

CHEVRON Supreme Motor Oil SAE 10W-30

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04-CA Prop 65-Carcin	14-ACGIH TWA	24-TSCA Sect 12(b)
05-CA Prop 65-Repro Tox	15-ACGIH STEL	25-TSCA Sect 8(a)
06-IARC Group 1	16-ACGIH Calc TLV	26-TSCA Sect 8(d)
07-IARC Group 2A	17-OSHA TWA	28-Canadian WHMIS
08-IARC Group 2B	18-OSHA STEL	29-OSHA CEILING
09-SARA 302/304	19-Chevron TWA	30-Chevron STEL
10-PA RTK	20-EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

DISTILLATES, SOLVENT-REFINED HEAVY PARAFFINIC

is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

is found on lists: 14,15,17,

PHOSPHORODITHIOIC ACID,O,O-DI-CL-14-ALKYL ESTERS, ZINC SALTS

is found on lists: 01,11,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

Revised to update Section 1 (Company I.D.), Section 5 (Fire Fighting Measures) and revises the MSDS to comply with the ANSI Z400.1 Standard.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 5

Revision Date: 03/20/93

MSDS Number: 004449

NDA -- No Data Available

NA - Not Applicable

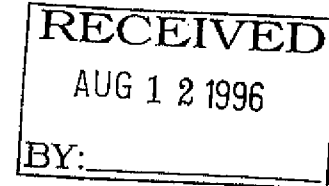
X-005021 (01-89)

246
National Sanitary Supply Co.
P.O. Box 61126
Los Angeles, Ca 90061
(213) 770-1970

8/06/96
2813 TOLONCHY, TALAL

193150

ASH GROVE CEMENT WEST, INC.
13939 N RIVERGATE BLVD
PORTLAND OR 97203-6608



Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal OSHA Hazard Communication Final Standard 29 CFR 1910.1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnesses in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias
Executive Administration

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061
Emergency No. 1-800-535-5053 (INFOTRAC)

EPA Reg. # 6836-73-11200

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT*

Product Name: ACTION D PLUS
DISINFECTANT CLEANER SANITIZER

Date Issued: 02/08/95
Supercedes: 11/14/94
National Item#: 1703XX

SECTION 2. INGREDIENTS CAS NUMBER PERCENT EXPOSURE LIMITS IN AIR OSHA PEL ACGIH TLV

ACTIVE INGREDIENTS:				
**OCTYL DECYL DIMETHYL AMMONIUM CHLORIDE	6824-95-3	1.140	N/E	N/E
**DIOCTYL DIMETHYL AMMONIUM CHLORIDE	5538-94-3	0.456	N/E	N/E
**DIDECYL DIMETHYL AMMONIUM CHLORIDE	7173-51-5	0.684	N/E	N/E
**ALKYL DIMETHYL BENZYL	68424-85-1	1.520	N/E	N/E

Other Ingredients:				
AMMONIUM CHLORIDE				
TETRASODIUM EDTA	64-02-8	2-3	N/D	N/D
ETHOXYLATED				
NONYL PHENOL	9016-45-9	3-4	N/D	N/D
SODIUM METASILICATE	6834-92-0	<1	5mg/M3	N/D
COLOR	NONE	<1	N/D	N/D
FRAGRANCE	NONE	<1	N/D	N/D
WATER	7732-18-5	BALANCE	NONE	NONE

*THESE MATERIALS ARE SUBJECT TO THE REPORTING REQUIREMENTS UNDER SARA TITLE III, SECTION 33 AND 40 CFR PART 372.
*THESE MATERIALS MUST HAVE APPROPRIATE FEDERAL AND STATE EPA REGISTRATIONS PRIOR TO SALE AND DISTRIBUTION.

N/A = Not Applicable N/D = Not Determined N/E = Not Established

SECTION 3. PHYSICAL DATA

Boiling Point (F): 212	Specific Gravity (Water=1): 1.017
Vapor Pressure (mm Hg.): <18	Percent Volatile (By Volume): 90
Vapor Density (Air=1): N/A	Evaporation Rate (Water =1): 1
Solubility in Water: SOLUBLE	pH Range: 12.0 - 13.5
Appearance and Odor: CLEAR GREEN/FLORAL FRAGRANCE.	

Section 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): NON-FLAMMABLE
Flammable: NON-FLAMMABLE
Auto-Ignition Temp.: LEL = N/A UEL = N/A
Extinguishing Media: CO2, DRY CHEMICAL, FOAM, WATER FOG

Special Fire Fighting Procedures: NORMAL FIRE FIGHTING PROCEDURES MAY BE USED. COOL AND USE CAUTION WHEN APPROACHING OR HANDLING FIRE-EXPOSED CONTAINERS.

Unusual Fire & Explosion Hazards: CONTAINERS MAY BURST IN HEAT.

SECTION 5. REACTIVITY DATA

Stability: STABLE
Hazardous Polymerization: WILL NOT OCCUR
Conditions to Avoid: NONE KNOWN TO NSS
Materials to Avoid: ANIONIC DETERGENTS. DO NOT MIX WITH OTHER CHEMICALS.
Hazardous Decomposition Products: THERMAL DECOMPOSITION MAY PRODUCE TOXIC FUMES. MAY CONSIST OF CO, CO2, HCl, SMALL AMOUNTS OF PHOSGENE, CHLORINE AND ORGANIC VAPORS OF UNKNOWN COMPOSITION.

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

Small Spills: (For Liquid Concentrate) RINSE AREA THOROUGHLY WITH WATER.
Large Spills: (For Liquid Concentrate) WEAR APPROPRIATE PROTECTIVE CLOTHING/
EQUIPMENT. DIKE AREA TO CONTAIN SPILL. CLEAN UP USING
ABSORBENT MATERIAL. PLACE ALL CONTAMINATED MATERIAL IN A
CLOSED CONTAINER FOR DISPOSAL.
Disposal: UNDILUTED (Liquid Concentrate) PRODUCT RECOVERED FROM
SPILLS MAY BE SENT TO LICENSED DISPOSAL FACILITY TO BE DISPOSED
OF IN ACCORDANCE WITH FEDERAL/STATE REGULATIONS AND LOCAL
ORDANCES.
Container Disposal: TRIPLE RINSE EMPTY CONTAINER THOROUGHLY WITH WATER
AND DISCARD IN REGULAR TRASH COLLECTION IF ALLOWED BY LOCAL, STATE AND
FEDERAL REGULATIONS IF NOT RECYCLED. DO NOT FLUSH TO SEWER.

SECTION 7. HEALTH HAZARD DATA

Primary Route(s) of Entry: EYES, SKIN, INGESTION, INHALATION.
Symptoms of Overexposure:
Eye Contact: EYE IRRITANT. IF NOT PROMPTLY TREATED, EYE DAMAGE MAY
RESULT.
Skin Contact: SKIN IRRITATION. IRRITATION CAN OCCUR FROM CONTACT
WITH CONCENTRATED PRODUCT OR FROM PROLONGED CONTACT. MILD IRRITATION DUE
TO DEFATTING OF SKIN.
Inhalation: EXCESSIVE INHALATION OF MISTS CAN BE HARMFUL AND MAY
CAUSE HEADACHE, DIZZINESS, ASPHYXIA, ANESTHETIC EFFECTS
AND POSSIBLE UNCONSCIOUSNESS.
Ingestion: HARMFUL IF SWALLOWED. POSSIBLE CHEMICAL PNEUMONITIS IF
ASPIRATED INTO LUNGS; NAUSEA. MAY CAUSE STOMACH PAIN/CRAMPS.
VOMITING AND NAUSEA. LD50 NOT ESTABLISHED. AVOID CONTAMINATION
OF FOOD.

Chronic Health Hazards: NONE KNOWN TO NSS.

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: IMMEDIATELY FLUSH THE EYE WITH LARGE QUANTITIES OF RUNNING
WATER FOR A MINIMUM OF 15 MINUTES. HOLD THE EYELIDS APART DURING THE
IRRIGATION TO ENSURE FLUSHING OF THE ENTIRE SURFACE OF THE EYE LID WITH
WATER. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.
Skin Contact: FLUSH THE EFFECTED AREA WITH LARGE QUANTITIES OF RUNNING
WATER WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING
BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.
Inhalation: REMOVE FROM CONTAMINATED AREA. IF SYMPTOMS OF RESPIRATORY
DISCOMFORT PERSISTS, GET MEDICAL ATTENTION.
Ingestion: REQUIRES IMMEDIATE MEDICAL MANAGEMENT. DRINK MILK OR WATER AND
GET MEDICAL ADVICE. VOMITING SHOULD BE INDUCED ONLY ON RECOMMENDATION
OF MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS
PERSON.

SECTION 9. SPECIAL PROTECTION INFORMATION

Respiratory Protection: AVOID EXPOSURE TO SPRAY OR MIST. WHERE REQUIRED
(IN THE ABSENCE OF APPROPRIATE VENTILATION). USE NIOSH APPROVED
ORGANIC VAPOR RESPIRATOR.
Ventilation: ROOM VENTILATION MUST BE ADEQUATE TO MAINTAIN VAPOR
CONCENTRATION BELOW TLV.
Protection Gloves: NEOPRENE (RUBBER) GLOVES RECOMMENDED.
Eye Protection: CHEMICAL GOGGLES/EYE PROTECTION.
Other Measures: APPROPRIATE PROTECTIVE EQUIPMENT WHEN GROSS EYE/SKIN
CONTACT MAY OCCUR. AVOID FOOD CONTAMINATION. WASH WITH
SOAP AND WATER AFTER USE/APPLICATION. EYEWASH
ACCESSIBILITY RECOMMENDED.

MATERIAL SAFETY DATA SHEET
Product Name: ACTION D PLUS DISINFECTANT
CLEANER SANITIZER
National Item#: 1703
Date Issed: 02/08/95

PAGE 3

SECTION 10. ADDITIONAL PRECAUTIONS

Handling and Storage: STORE IN A COOL, DRY PLACE. FOLLOW LABEL DIRECTIONS.
KEEP OUT OF REACH OF CHILDREN. DO NOT STORE ON SIDE.
AVOID CREASING OR IMPACTING SIDE WALLS CONTAINER.

SARA TITLE III H&P RATINGS: Acute, YES Chronic, NO Fire, NO
Press. Release, NO Reactive, NO

HMIS RATING: HEALTH-2 FIRE -0 REACTIVITY -0 PROTECTION -B
NFPA RATING: HEALTH-2 FIRE -0 REACTIVITY -0 SPECIFIC -0

SECTION 11. REGULATORY (OPTIONAL)

HM-181 Proper Shipping Name (DOT)

HM-181 Description (DDT):

Proper Shipping Name Code: UN Number: _____ PG#: _____

VOC Content: Theoretical = N/A lb/gal. Typical Analytical = N/A lbs/gal.
Phosphorous: % Concentrate = NONE Dilution Range: N/A - N/A gms./gal.

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST
DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT
UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF
APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE
PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS
MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD
COMMUNICATION REGULATION.

MATERIAL SAFETY DATA SHEET

Date: 11/07/96

Nos. 1905, 5120, 5111

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265
EMERGENCY TELEPHONE NUMBER — 573-473-3626

SECTION I

PRODUCT NAME: SUPER HYBOND[®] GREENGUN-45
SUPER HYBOND[®] Plus GREENGUN-45 Plus
SUPER HYBOND[®] GR SUPER BOND
SUPER HYBOND[®] GR Plus SUPER BOND Plus
SUPER HYBOND[®] J
SUPER HYBOND[®] J Plus
SUPER HYBOND[®] S
SUPER HYBOND[®] S Plus

PRODUCT TYPE: Plastic Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO₂ = 48-51% Al₂O₃ = 43-46% **FORMULA:** Not Applicable
Fe₂O₃ = 1-2% TiO₂ = 1-3%
NaKO = 1%

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (3-12%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (1-4%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Aluminum Sulfate (<5%)	2 mg/m ³ *	10043-01-3
Glass Cullet (Powdered Glass) (<5%)	(None)	(None)

*Source: American Conference of Governmental Industrial Hygienists, 1995-1996.

SECTION III

HAZARDS INFORMATION

Since product contains aluminum sulfate, SO_x fumes may be given off during burn-in.

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

<u>EYES:</u>	ACUTE:	Dust can cause mechanical irritation. Product's cement can cause eye irritation.
	CHRONIC:	None Known
<u>SKIN:</u>	ACUTE:	Product's cement can cause skin irritation.
	CHRONIC:	None Known
<u>INHALATION:</u>	ACUTE:	Dust generated can cause breathing discomfort or irritation.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
<u>INGESTION:</u>	ACUTE:	Unknown
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: The aluminum sulfate present, if heated to decomposition, will emit toxic fumes of SO_x.

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped containers of product.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray, Granular Mixture		
BOILING POINT:	Not Applicable	pH:	2-4
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	2.6	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: New Format, Replaces MSDS Dated 09/01/93

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

JH:\MSDS\CURRENT\SHYBOND.116

MSDS 30510

- 1. REVISION DATE 03/04/86
 - 2. PRODUCT NAME DOLOMITIC HYDRATED LIME
 - 3. PURE CHEMICAL NAME . LIME
 - 4. CHEM. CATEGORY
 - 5. DOT CLASSIFICATION .
 - 6. MANUFACTURER GENSTAR LIME CO.
EMERGENCY PHONE ... 702-643-7702
 - 7. VENDOR
 - 8. HEALTH 3 SERIOUS HAZARD
 - 9. FLAMMABILITY 0 MINIMAL HAZARD
 - 10. REACTIVITY 1 SLIGHT HAZARD
 - 11. PROTECTION CODE D
FACE SHIELD, GLOVES, SYNTHETIC APRON
 - 12. SOLID/LIQUID/GAS ... SOLID
 - 13. SPECIFIC GRAVITY ... NONE LISTED BY MANUFACTURER
 - 14. BOILING POINT 3162 DEG. F
 - 15. FLASH POINT NONFLAMMABLE
 - 16. FORM MIXTURE
- WHICH ONE ? (E=EXIT, P#=PAGE)

MSDS 30510
PRODUCT NAME .. DOLOMITIC HYDRATED LIME
MANUFACTURER .. GENSTAR LIME CO.

SCREEN 1 OF 1

HAZARDOUS INGREDIENTS	PCT	CAS NO.
1 Calcium Hydroxide	50.0	1305-62-0
2 Magnesium Hydroxide	35.0	1309-42-8
3 Calcium Carbonate	5.0	1317-65-3
4 Silicon Dioxide	3.0	14808-60-7

WHICH ONE ? (E=EXIT, P#=PAGE, S#=SCROLL)

SECTION 1: PRODUCT IDENTIFICATION

Product Name: Fiber Glass Insulation Generic Name: Fiber Glass Wool Product Chemical Name: Mixture Manufacturer: Schuller International, Inc. Address: P.O. Box 5108 Denver, CO 80217-5108	CAS#: Mixture/None Assigned Formula: Mixture Hazard Label: FBG-003 or FBG-012 Telephone: (303)978-4900 Emergency: 1-800-424-9300
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Trade Names:

800 Series Spin Glas® Board Insulations; 1000 Series Spin Glas® Board; Acoustic Backing Board; EcoTherm™ Industrial Pipe Insulation; Insul-SHIELD™ Black (Coated); Fabrication Board; Fabricated Duct Board; Grooved Duct Board; Hullboard (Incombustible); Incombustible Microlite®; Mat Faced & Permacote® Linacoustic® (Types: Standard, HP, and R-300); Micro-Aire® Duct Board; Micro-Lok® Pipe Insulation; Microlite® Duct Wrap (plain, FSK, & vinyl faced); PAT Board; Permacote Spiracoustic™; Pipe and Tank Insulation; Precipitator Spin Glas®; R series Microlite® (plain, FSK, & vinyl faced); Rigid Round™ (faced); Spin Glas® HFB 28 & 23; Spiracoustic™; Spiracoustic Plus™; SuperDuct™ Boards; SuperRound®; SuperVane®; Zeston Hi-Lo Temp® Insulation Inserts

SECTION 2: INGREDIENTS

Ingredient Name	CAS #	%	Exposure Limit(s)
Fiber glass wools	65997-17-3	50-98	1 fiber/cc workplace exposure guideline (Schuller) 5 mg/m³ respirable fraction (OSHA) 10 mg/m³ total dust (ACGIH)
Binder may be either:			
Urea extended phenol-formaldehyde resin (cured)	25104-55-6	2-18	Not established
or			
Urea extended phenol-melamine-formaldehyde resin (cured)	25212-25-3	2-18	Not established
Non-woven, AP, FSK, or vinyl facings; or vinyl, acrylic, or latex coatings	None assigned	1-40	Not established

SECTION 3: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR: Gold-to-yellow or black fibrous glass blanket, board, or formed shapes with or without non-woven or vinyl facings; no significant odor.

Products designed for high temperature applications (above 177°C/ 350°F), may release gases irritating to the eyes, nose and throat during initial heat-up. In tightly confined or poorly ventilated areas, use air supplied respirators during the first heat-up cycles.

Under normal conditions of use, this product is not expected to create any unusual emergency hazards.

Inhalation of excessive amounts of dust from the product may cause temporary upper respiratory irritation and/or congestion--remove affected individuals to fresh air.

Skin Irritation may be treated by gently washing affected area with soap and warm water.

Eye Irritation may be treated by flushing eyes with large amounts of water. If irritation persists, contact a physician.

In the event of fire, use normal fire fighting procedures to prevent inhalation of smoke and gases.

Potential Health Effects

Summary:

Breathing dust from this product may cause a scratchy throat, congestion, and slight coughing. Getting dust or fibers on the skin, or in the eyes may cause itching, rash, or redness. Breathing large amounts of dust or fibers from this product may lead to chronic health effects as discussed in Section 11 of this material safety data sheet.

Acute (Short-Term) Health Effects:

Dust from this product is a mechanical irritant, which means that it may cause irritation or scratchiness of the throat, and/or itching in the eyes and skin.

Chronic (Long-Term) Health Effects:

Studies have been conducted to determine the long-term health effects of fiber glass. The results of a worker health study that looked at the respiratory health of fiber glass manufacturing workers were published in 1993, and the results indicated no lung disease ("no adverse clinical, functional or radiographic signs of effects"). Studies of fiber glass manufacturing workers have shown a small excess of lung cancer when compared to local control groups. However, there is no evidence that this excess is related to breathing fiber glass. Five previous chronic inhalation studies exposing animals to a special purpose fiber glass have not shown any evidence of disease. Early data from a current ongoing chronic animal inhalation study has shown mesothelioma and fibrosis with exposure to special purpose fiber glass. The fiber glass insulation products listed on this material safety data sheet do not contain special purpose fiber glass. In other fiber glass studies, animals exposed by artificial means (such as fiber glass injected in the lungs or chest cavity) did develop tumors. More detailed information concerning the health effects of fiber glass is described in Section 11 of this material safety data sheet.

Target Organs:

Throat, lungs, skin, eyes.

Primary Routes of Entry (Exposure):

Inhalation (breathing dust or fibers), skin, and eye contact.

Medical Conditions Which May Be Aggravated:

Pre-existing chronic respiratory, skin, or eye diseases or conditions.

Symptoms Of Overexposure

Inhalation:

Irritation of the upper respiratory tract (scratchy throat), coughing, and congestion may occur in extreme exposures.

Skin:

Temporary irritation (itching) or redness may occur.

Absorption:

Not applicable.

Ingestion:

This product is not intended to be ingested or eaten under normal conditions of use. If ingested, it may cause temporary irritation to the gastrointestinal (GI) tract, especially the stomach.

Eye:

Temporary irritation (itching) or redness may occur.

SECTION 4: FIRST AID MEASURES

Inhalation:

Remove to fresh air. Drink water to clear throat, and blow nose to remove fibers and dusts.

Skin:

Wash gently with soap and warm water to remove dust and fibers. Wash hands before eating or using the restroom.

Absorption:

Not applicable.

Ingestion:

Product is not intended to be ingested or eaten. If this product is ingested, irritation of the gastrointestinal (GI) tract may occur, and should be treated symptomatically. Rinse mouth with water to remove fibers, and drink plenty of water to help reduce the irritation. No chronic effects are expected following ingestion.

Eye:

Do not rub or scratch your eyes. Dust particles may cause the eye to be scratched. Flush eyes with large amounts of water for 5-15 minutes. If irritation persists, contact a physician.

Notes to Physician:

This product is a mechanical irritant, and is not expected to produce any chronic health effects from acute exposures. Treatment should be directed toward removing the source of irritation with symptomatic treatment as necessary.

SECTION 5: FIRE FIGHTING MEASURES

Flammable Properties:

Flash Point: Not applicable
Method: Not applicable
Flammable Limits: Not applicable
Flammable Classification: Not determined
Flame Propagation: Not determined

Explosive Limits:

LEL: Not applicable
UEL: Not applicable
Autoignition Temperature: Not determined
Decomposition Temperature: Not determined

Unusual Fire/Explosion Hazards:

There is no potential for fire or explosion.

No special procedures are expected to be necessary for this product. Normal fire fighting procedures should be followed to avoid inhalation of smoke and gases.

Extinguishing Media:

Carbon dioxide (CO₂), water, water fog, dry chemical.

SECTION 6: ACCIDENTAL SPILL/RELEASE MEASURES

Containment Procedures:

Pick up large pieces. Vacuum dusts. If sweeping is necessary, use a dust suppressant such as water. Do not dry sweep dust accumulation or use compressed air to clean-up. These procedures will help to minimize potential exposures.

Disposal:

Wastes are not hazardous as defined by the Resource Conservation and Recovery Act (RCRA; 40 CFR 261). Comply with state and local regulations for disposal of fiber glass wool products. If you are unsure of the regulations, contact your local Public Health Department, or the local office of the Environmental Protection Agency (EPA).

SECTION 7: HANDLING AND STORAGE

Storage Handling:

Use protective equipment as described in Section 8 of this material safety data sheet when handling uncontained material. Warehouse storage should be in accordance with package directions, if any. Material should be kept dry, and protected from the elements.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

Summary:

Protective equipment should be provided as necessary to prevent irritation of the throat, eyes, and skin, and to keep exposures below the applicable exposure limits identified in Section 2.

Eye:

Safety glasses with sideshields are recommended to keep dust and fibers out of the eyes.

Skin:

Leather or cotton gloves should be worn to prevent skin contact and irritation. Barrier creams may also be used to reduce skin contact and irritation caused by fiber glass.

Respiratory:

A respirator should be used if ventilation is unavailable, or is inadequate for keeping dust and fiber levels below the applicable exposure limits. In those cases, use a NIOSH-certified disposable or reusable particulate respirator with an efficiency rating of N95 or higher (under 42 CFR 84) when working with this product. For exposures up to five times the established exposure limits use a quarter-mask respirator, rated N95 or higher; and for exposures up to ten times the established exposure limits use a half-mask respirator (e.g., MSA's DM-11, Racal's Delta N95, 3M's 8210), rated N95 or higher. Operations such as sawing, blowing, tear out, and spraying may generate airborne fiber concentrations requiring a higher level of respiratory protection. For exposures up to 50 times the established exposure limits use a full-face respirator, rated N99 or higher.

Ventilation:

Local exhaust ventilation should be provided at areas of cutting to remove airborne dust and fibers. General dilution ventilation should be provided as necessary to keep airborne dust and fibers below the applicable exposure limits and guidelines. The need for ventilation systems should be evaluated by a professional industrial hygienist, while the design of specific ventilation systems should be conducted by a professional engineer.

Other:

Loose-fitting, long-sleeved clothing should be worn to protect skin from irritation. Exposed skin areas should be washed with soap and warm water after handling or working with fiber glass. Clothing should be washed separately from other clothes, and the washer should be rinsed thoroughly (run empty for a complete wash cycle). This will reduce the chances of fiber glass being transferred to other clothing.

Special Considerations for Repair/Maintenance of Contaminated Equipment:

Use personal protective equipment as discussed above. Where possible, vacuum equipment before repair/maintenance to remove excessive dust and loose fibers.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (°F/°C):	Not determined
Evaporation Rate (Butyl acetate = 1):	Not applicable
Melting Point:	>704°C/1300°F
pH:	Not applicable
Saturation in Air (%):	Not applicable
Solids Content:	Not applicable
Specific Gravity (Water = 1):	Variable
Vapor Density (Air = 1):	Not applicable
Vapor Pressure:	Not applicable
Viscosity:	Not applicable
VOCs (g/liter):	Not applicable
Volatile by Volume (%):	0
Water Solubility (%):	Nil

Appearance and Odor:

Gold-to-yellow or black fibrous glass blanket, board, or formed shapes with or without non-woven or vinyl facings; no significant odor.

SECTION 10: STABILITY AND REACTIVITY

Product is stable.

Hazardous polymerization will not occur.

Reactivity:

This product is not reactive.

Hazardous Decomposition Products:

The decomposition products from this material are those that would be expected from any organic (carbon-containing) material, and are mainly derived from pyrolysis, or burning, of the resin. These decomposition products may include carbon dioxide, carbon monoxide, carbon particles, formaldehyde, and traces of hydrogen cyanide.

SECTION 11: TOXICOLOGICAL AND EPIDEMIOLOGICAL DATA

This product has not been tested as a separate entity. Therefore, the hazards must be evaluated on the basis of the individual ingredients, and those hazards must be assumed to be additive in the absence of complete information. The hazards described in this document have been evaluated based on a threshold of 1.0% for all hazardous ingredients and 0.1% for all carcinogens.

Acute Effects:

The fibers from this product are mechanical irritants and may cause transitory irritation to exposed areas such as eyes, skin, and upper respiratory passages.

The LD₅₀ and LC₅₀ (dose or concentration lethal to 50% of a population of test animals) for this product have not been determined.

Chronic Effects:

In 1993, the results of a study that looked at the respiratory health of fiber glass manufacturing workers were published. When comparing the health of these workers to members of the local communities, the researchers reported, "These results indicate no adverse clinical, functional or radiographic signs of effects of exposure to MMMFs (fiber glass is an MMMF) in these workers." In addition to reporting the current results, the investigators concluded that, "the results of this investigation are consistent with previously reported cross-sectional studies that have failed to find persuasive evidence of respiratory effects of manufacture of MMMF."

A 1990 update of a mortality study of U.S. fiber glass manufacturing workers reported a small but statistically significant excess in respiratory cancer among the workers. This increase in respiratory cancer, however, could not be associated with exposure to fiber glass because no relationship was found between dose response or length of employment and the increase in cancer rates. This study has been expanded, while continuing to monitor the workers' cancer rates, to identify and examine possible factors (e.g., smoking) contributing to the increase in respiratory cancer.

Previous chronic animal inhalation studies have not shown any irreversible disease effects related to building insulation fiber glass exposure. Five previous chronic inhalation studies exposing animals to a special purpose fiber glass have also not shown any evidence of disease. In a chronic animal inhalation study currently underway, animals are being exposed to high airborne levels (250 fibers per cubic centimeter (f/cc); as compared to our workplace exposure guideline of 1.0 f/cc) of two types of fiber glass: special purpose and building insulation. Interim results from this study have shown mesothelioma and fibrosis in the animals exposed to the special purpose fiber. The animals exposed to the building insulation fiber have not shown any evidence of disease. This finding regarding the building insulation fiber presently being tested is consistent with previously completed animal inhalation studies of this same fiber type. In other fiber glass studies, animals which were exposed by artificial means (e.g., implantation and injection) have shown development of tumors.

Data from the artificial exposure studies, along with data from extensive epidemiological studies of fiber glass manufacturing workers, were reviewed by the International Agency for Research on Cancer (IARC) in 1987 and were found to provide inadequate evidence of carcinogenicity in humans. However, based on the data from the artificial exposure studies in animals, IARC classified glass wool as possibly carcinogenic to humans, Group 2B. Following the IARC Group 2B designation, the National Toxicology Program (NTP) classified glasswool (respirable size) as reasonably anticipated to be a carcinogen. The Occupational Safety and Health Administration (OSHA) has not classified glass wool fibers.

References:

A detailed listing of references on fiber glass health effects can be found in Schuller's publication HSE-64C, "Health and Safety Aspects of Fiber Glass," available free of charge from the Schuller Product Information Center. Major references used for the information contained in this material safety data sheet are as follows:

"Canadian Environmental Protection Act: Priority Substances List Assessment Report - Mineral Fibres (Man-Made Vitreous Fibres)," 1993.

Enterline, P.E., et al., "Mortality Update of a Cohort of U.S. Man-Made Mineral Fibre Workers," *Annals of Occupational Hygiene*, 31:625-656, 1987.

Hughes, J.M., et al., "Follow Up Study of Workers Exposed to Man-Made Mineral Fibers," *British Journal of Industrial Medicine*, 50:658-667, 1993.

"IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Man-Made Mineral Fibres and Radon," World Health Organization, Lyon, France, Monograph 43, 1988.

Marsh, G., et al., "Mortality Among a Cohort of U.S. Man-Made Mineral Fiber Workers: 1985 Follow-up," *Journal of Occupational Medicine*, 1990.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity:

Product has not been tested for ecotoxicity.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Summary:

This product is not regulated as a hazardous waste by the U.S. Environmental Protection Agency (EPA) under Resource Conservation and Recovery Act (RCRA) regulations. Comply with state and local regulations for disposal. If you are unsure of the regulations, contact your local Public Health Department, or the local office of the EPA.

SECTION 14: TRANSPORT INFORMATION

U.S. Department of Transportation Shipping Classification:
Not classified a hazardous material.

SECTION 15: REGULATORY INFORMATION

U. S. Regulations

Federal Regulations:

This product has not been classified a carcinogen by the International Agency for Research on Cancer (IARC), the Occupational Safety and Health Administration (OSHA), or the National Toxicology Program (NTP).

Glasswool (respirable size) has been classified by NTP as reasonably anticipated to be a carcinogen. IARC has classified glasswool as possibly carcinogenic to humans, Group 2B. OSHA has not classified glasswool fibers.

The OSHA Permissible Exposure Limits (PELs) identified in Section 2 are based upon the revised PELs of 1988. OSHA has been challenged by the courts to provide more information about its update process. Until these issues are resolved, Schuller will continue to list these PELs.

This product and its components are listed on the Toxic Substances Control Act Chemical Substance Inventory (TSCA).

State Regulations:

California Proposition 65

Substances known to the state to cause cancer: glasswool fibers (airborne particles of respirable size).

Other Environmental Information:

There are no chemicals in this product regulated by SARA 313, CERCLA, or TSCA12(b).

International Regulations

Canada Domestic Substance List (DSL):

This product and its component parts are listed on the Canada Domestic Substance List.

This material is a class D2A controlled product under Canadian WHMIS Regulations (based on the IARC 2B classification for Man-Made Vitreous Fiber). However, a 1993 Canadian Government report classified fiber glass wool as unlikely to be carcinogenic to humans.

SECTION 16: OTHER INFORMATION

For additional information concerning this product, contact the Schuller Product Information Center at P.O. Box 5108, Denver, CO 80217-5108, or call toll-free (800)654-3103 (outside the U.S., call collect (303)978-4900).

MSDS Revision Summary:

Date	MSDS #	Reason
01/01/92	1009-1.0	Format revision
05/15/92	1009-2.0	Company name change; Sect 1: Added products to Trade Name
09/15/92	1009-3.0	Sects. 1 & 11: Added SuperDuct Boards to Trade Name; Manufacturer name change
12/15/92	1009-3.1	Sects. 1 & 11: Added SuperVane to Trade Names; Updated Regulatory Information
06/15/93	1009-3.2	Sect. 4,11: Editorial changes
12/31/93	1009-3.3	Sect. 1: Header, Product, & Trade Names Sect. 11: Chronic Effects, updated
01/31/94	1009-3.4	Sect. 1: Trade names added: CM-26 (coated); Equipment Spin-Glas+ Board (faced); Exact-O-Kote+; Exact-O-Mat+
03/15/94	1009-3.5	Sect. 1: Trade Names revised
06/15/94	1009-3.6	Sect. 3: Emergency Overview
08/01/94	1009-4.0	Sect. 11: Regulatory: NTP/Canadian classification of glasswool fibers (respirable size);
09/01/95	1009-4.1	Conversion to ANSI 16 section format; Section 1 Trade Names: changed Linacoustic® type R to R-300, and added Spiracoustic® Plus and Duct Board Type LP.
06/28/95	1009-4.2	Section 1 Trade Names: removed Medium Pressure Fiber Glass Duct Board (redundant, see SuperDuct™ Boards); replaced ® with ™ in Spiracoustic line to correct trademark designation; added ® to SuperVane.
09/13/95	1009-4.3	Section 1 Trade Names: added Acoustic Backing Board which was inadvertently removed March 15, 1994.
05/15/96	1009-5.0	Header: replaced logo with current standard and reformatted layout; Section 1 Trade Names: added new products, Insul-SHIELD Black (Coated) and Fabrication Board; Section 2: modified fiber glass wool to fiber glass wools; Sections 3 and 11 Chronic Health Effects: updated with new fiber glass toxicology data; Section 8 Respiratory Protection: modified recommended protection based on 42 CFR Part 84 requirements.
07/19/96	1009-5.1	Section 1 Hazard Label: added FBG-012 (warning label for Micro-Lok® & EcoTherm™ Pipe Insulation); Trades Names: added EcoTherm™ Industrial Pipe Insulation.

Prepared for:

Schuller International, Inc.
Mechanical Insulations Division
P.O. Box 5108
Denver, CO 80217-5108

Prepared by:

MTC Health, Safety & Environment Department
P.O. Box 625005
Littleton, CO 80162-5005

As of the date of preparation of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable federal and state law(s). However, no warranty or representation with respect to such information is intended or given.

--- END OF MSDS 1009-5.1 ---

VWR SCIENTIFIC PRODUCTS
1310 GOSHEN PARKWAY
WEST CHESTER, PA 19380
TELEPHONE: (610)431-1700

000000000
ATTN HOWARD
ASH GROVE
13939

PORTLAND OR 97203

01-22-97

DEAR CUSTOMER:

ENCLOSED ARE THE MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR THE PRODUCT(S) THAT YOUR COMPANY RECENTLY PURCHASED FROM VWR SCIENTIFIC PRODUCTS. PLEASE FORWARD THESE MSDS(S) TO YOUR SAFETY OFFICER OR OTHER INDIVIDUAL IN YOUR ORGANIZATION RESPONSIBLE FOR IMPLEMENTING THESE REGULATIONS.

"ALL DATA OR INFORMATION REGARDING THE PARTICULAR PRODUCT YOU HAVE PURCHASED FROM VWR SCIENTIFIC PRODUCTS, WHICH IS PROVIDED IN THE ENCLOSED MATERIAL SAFETY DATA SHEET, IS OFFERED GRATUITOUSLY AND IN GOOD FAITH AS ACCURATE, BUT IS FURNISHED WITHOUT GUARANTY. VWR SCIENTIFIC PRODUCTS MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, YOU SHOULD PERFORM YOUR OWN INVESTIGATION AND INDEPENDENT VERIFICATION. THE CONDITIONS OF THE USE OF THE PRODUCT, AND THE SUITABILITY OF THE PRODUCT FOR YOUR PARTICULAR PURPOSES, ARE BEYOND THE CONTROL OF VWR SCIENTIFIC PRODUCTS. THUS, ALL RISKS OF THE USE OF THE PRODUCT ARE THEREFORE ASSUMED BY YOU, THE USER, EXCEPT AS TO SUCH WARRANTIES AS MAY BE PUBLISHED BY VWR SCIENTIFIC PRODUCTS, WITH RESPECT TO A PARTICULAR PRODUCT. VWR SCIENTIFIC PRODUCTS EXPRESSLY DISCLAIMS ALL WARRANTIES OF EVERY KIND, AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. VWR SCIENTIFIC PRODUCTS SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATEVER NATURE, DIRECTLY OR INDIRECTLY, RESULTING FROM USE OF THE PRODUCT, OR FROM THE PUBLICATION OF USE OF OR RELIANCE UPON DATA CONTAINED IN THE ENCLOSED MSDS. NOTHING IN THE MSDS IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS, OR WHICH EXTEND LICENSES UNDER VALID PATENTS. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO PASS ON TO YOUR CUSTOMER THE INFORMATION CONTAINED IN THE MSDS, AND GIVE TO THEM APPROPRIATE WARNINGS AND SAFE HANDLING INSTRUCTIONS AS NECESSARY TO MAKE THE PRODUCT SAFE FOR THE INTENDED USES BY YOUR CUSTOMER.

THANK YOU,

VWR SCIENTIFIC PRODUCTS

TO: 5032892272

FROM: VWR Scientific

01-22-97 15:25 p. 3 of 9

PAGE 001

01-22-97

CATALOG
NUMBER

MSDS
FORM-DOC
NUMBER

EM-SX0395-1

SX0395

MATERIAL SAFETY DATA SHEET

EM SCIENCE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER.....:

EM SCIENCE
A DIVISION OF EM INDUSTRIES
P.O. BOX 70
480 DEMOCRAT RD.
GIBBSTOWN, N.J. 08027

PREPARATION DATE.: 12/10/92
DATE MSDS PRINTED.: DEC 21, 1992

INFORMATION PHONE NUMBER.: 609-354-9200
HOURS: MON. TO FRI. 8:30-5
CHEMTREC EMERGENCY NUMBER: 800-424-9300
HOURS: 24 HRS A DAY

CATALOG NUMBER(S):

6392	6394	6395	SX0395	SX0397	SX0398
SX0400	SX0410				

CHEMICAL NAME.....:

SODIUM CARBONATE, ANHYDROUS

TRADE NAME.....:

SODA ASH

CHEMICAL FAMILY...: ALKALI SALT

FORMULA.....: 1000 PPM BA IN SOLUTION

MOLECULAR WEIGHT.: 105.99

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS #	APPR %
SODIUM CARBONATE	497-19-8	100%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.
MAY BE HARMFUL IF SWALLOWED.
MAY CAUSE EYE INJURY.

APPEARANCE.....:

WHITE; GRANULAR OR POWDER

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

SYMPTOMS OF EXPOSURE:

MSDS (CONTINUED) - SX0395

PAGE # 1

POSSIBLY HARMFUL IF SWALLOWED.
IRRITATING TO EYES, SKIN, RESPIRATORY TRACT; MAY CAUSE
EYE BURNS.
INGESTION CAN SEVERELY DAMAGE MUCOUS MEMBRANES AND CAUSE
PAIN, VOMITING, DIARRHEA, AND CIRCULATORY COLLAPSE.
AVOID SIMULTANEOUS PRESENCE OF SODA ASH AND LIME DUST; THE
COMBINATION IN THE PRESENCE OF PERSPIRATION OR MOISTURE
WILL CAUSE FORMATION OF CORROSIVE CAUSTIC SODA.

MEDICAL COND. AGGRAVATED BY EXPOSURE:
DATA NOT AVAILABLE.

ROUTES OF ENTRY.....:
INHALATION, INGESTION

CARCINOGENICITY.....:
THE MATERIAL IS NOT LISTED (IARC, NTP, OSHA) AS CANCER CAUSING
AGENT.

4. FIRST AID MEASURES

EMERGENCY FIRST AID:
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.
SKIN: IMMEDIATELY FLUSH THOROUGHLY WITH LARGE AMOUNTS OF WATER.
EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15
MINUTES.
INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF
BREATHING HAS STOPPED.
INGESTION: DO NOT INDUCE VOMITING; IF CONSCIOUS, GIVE WATER
FREELY AND GET MEDICAL ATTENTION.

5. FIRE FIGHTING MEASURES

FLASH POINT (F).....: NONCOMBUSTIBLE
FLAMMABLE LIMITS LEL (%): N/A
FLAMMABLE LIMITS UEL (%): N/A
EXTINGUISHING MEDIA.....:
USE ANY SUITABLE FOR ADJACENT MATERIAL.

FIRE FIGHTING PROCEDURES.:
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.
WEAR FULL FACE SHIELD

FIRE & EXPLOSION HAZARDS.:
NONE

6. ACCIDENTAL RELEASE MEASURES

SPILL RESPONSE:

MSDS (CONTINUED) - SX0395

PAGE # 2

EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL.
WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE /
PERSONAL PROTECTION.
ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE
FREE FROM EXPLOSION OR FIRE HAZARDS.
CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE
WITHOUT RISK.
TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER
DISPOSAL.
COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING
RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE
QUANTITY AND OTHER REGULATORY DATA.

7. HANDLING AND STORAGE

HANDLING & STORAGE:

KEEP CONTAINER TIGHTLY CLOSED.
STORE IN A COOL, DRY, WELL-VENTILATED AREA.
STORE AWAY FROM MINERAL AND ORGANIC ACIDS.
DO NOT GET IN EYES.
AVOID SKIN CONTACT.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION
MATERIAL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME
HOOD OR WITH ADEQUATE VENTILATION.
PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO
PREVENT SKIN CONTACT
SAFETY GLASSES WITH SIDE SHIELDS MUST BE WORN AT ALL TIMES.

WORK / HYGENIC PRACTICES:

WASH THOROUGHLY AFTER HANDLING.
DO NOT TAKE INTERNALLY.
EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

EXPOSURE GUIDELINES

OSHA - PEL:

COMPONENT	PPM	TWA MG/M3	PPM	STEL MG/M3	PPM	CL MG/M3	SKIN
SODIUM CARBONATE							

ACGIH - TLV:

COMPONENT	PPM	TWA MG/M3	PPM	STEL MG/M3	PPM	CL MG/M3	SKIN
SODIUM CARBONATE							

SODIUM CARBONATE

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT (C 760 MMHG): DECOMPOSES
 MELTING POINT (C): 851C
 SPECIFIC GRAVITY (H2O = 1): 2.53
 VAPOR PRESSURE (MM HG): N/A
 PERCENT VOLATILE BY VOL (%): N/A
 VAPOR DENSITY (AIR = 1): N/A
 EVAPORATION RATE (BUAC = 1): N/A
 SOLUBILITY IN WATER (%): 22
 APPEARANCE:
 WHITE; GRANULAR OR POWDER

10. STABILITY AND REACTIVITY

STABILITY: YES

HAZARDOUS POLYMERIZATION:
 DOES NOT OCCUR

HAZARDOUS DECOMPOSITION.:
 CO2, NA2O

CONDITIONS TO AVOID:
 CONTACT WITH STRONG ACID MAY RESULT IN VIOLENT REACTION.
 STARTS TO DECOMPOSE, LOSING CO2, AT 400C.

MATERIALS TO AVOID:

☐ WATER
☒ ACIDS
☐ BASES
☐ CORROSIVES
☐ OXIDIZERS
☒ OTHER :
 ALUMINUM, FLUORINE, PHOSPHORUS PENTOXIDE, SULFURIC ACID

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

MSDS (CONTINUED) - SX0395

PAGE # 4

ORL-RAT LDLO: 4090 MG/KG
IHL-MUS LC50: 1200 MG/M3/2H

IPR-MUS LD50: 117 MG/KG

TOXICOLOGICAL FINDINGS:

TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY PRODUCE ADVERSE
REPRODUCTIVE EFFECTS.

CITED IN REGISTRY OF TOXIC EFFECTS OF SUBSTANCES (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA WASTE NUMBERS:

TREATMENT:

MATERIAL DOES NOT HAVE AN EPA WASTE NUMBER AND IS NOT A LISTED
WASTE, HOWEVER CONSULTATION WITH A PERMITTED WASTE DISPOSAL SITE
(TSD) SHOULD BE ACCOMPLISHED.

ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE
COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME...:

NON-REGULATED

DOT ID NUMBER.....: NONE

14. REGULATORY INFORMATION

TSCA INVENTORY.....:

THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE TSCA INVENTORY.

COMPONENT	SARA EHS (302)	SARA EHS TPQ (LBS)	CERCLA RQ (LBS)

SODIUM CARBONATE			

COMPONENT	OSHA FLOOR LIST	SARA 313	DEMINIMIS FOR SARA 313 (%)

SODIUM CARBONATE			

15. OTHER INFORMATION

MSDS (CONTINUED) - SX0395

PAGE # 5

COMMENTS:

NONE

NFPA HAZARD RATINGS:

HEALTH : 1
FLAMMABILITY : 0
REACTIVITY : 0
SPECIAL HAZARDS :

REVISION HISTORY:

08/01/84 12/04/86 10/27/87 06/20/88 03/01/91

1 = REVISED SECTION

N/A = NOT AVAILABLE

N/E = NONE ESTABLISHED

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MSDS - SX0395

PAGE # 6

"ISSUED BY VWR 01-22-97"

VWR SCIENTIFIC PRODUCTS
1310 GOSHEN PARKWAY
WEST CHESTER, PA 19380
TELEPHONE: (610)431-1700

01 005000709
ATTN SAFETY OFFICER
ASH GROVE CEMENT

13939 N RIVERGATE BLVD
PORTLAND OR 97203

01/23/97

DEAR CUSTOMER:

ENCLOSED ARE THE MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR THE PRODUCT(S) THAT YOUR COMPANY RECENTLY PURCHASED FROM VWR SCIENTIFIC PRODUCTS. PLEASE FORWARD THESE MSDS(S) TO YOUR SAFETY OFFICER OR OTHER INDIVIDUAL IN YOUR ORGANIZATION RESPONSIBLE FOR IMPLEMENTING THESE REGULATIONS.

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THANK YOU,

VWR SCIENTIFIC PRODUCTS

01/23/97

P.O. NUMBER	INVOICE NUMBER	SALE DATE	CATALOG NUMBER	MSDS FORM/DOC NUMBER
897172	1490457	01/22/97	EM-SX0395-1	SX0395

MATERIAL SAFETY DATA SHEET

EM SCIENCE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER.....:

EM SCIENCE
A DIVISION OF EM INDUSTRIES
P.O. BOX 70
480 DEMOCRAT RD.
GIBBSTOWN, N.J. 08027

PREPARATION DATE.: 12/10/92

DATE MSDS PRINTED.: DEC 21, 1992

INFORMATION PHONE NUMBER.: 609-354-9200
HOURS: MON. TO FRI. 8:30-5
CHEMTREC EMERGENCY NUMBER: 800-424-9300
HOURS: 24 HRS A DAY

CATALOG NUMBER(S):

6392	6394	6395	SX0395	SX0397	SX0398
SX0400	SX0410				

CHEMICAL NAME.....:

SODIUM CARBONATE, ANHYDROUS

TRADE NAME.....:

SODA ASH

CHEMICAL FAMILY...: ALKALI SALT

FORMULA.....: 1000 PPM BA IN SOLUTION

MOLECULAR WEIGHT.: 105.99

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS #	APPR %
SODIUM CARBONATE	497-19-8	100%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.

MAY BE HARMFUL IF SWALLOWED.

MAY CAUSE EYE INJURY.

APPEARANCE.....:

WHITE; GRANULAR OR POWDER

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

SYMPTOMS OF EXPOSURE:

MSDS (CONTINUED) - SX0395

PAGE # 1

POSSIBLY HARMFUL IF SWALLOWED.

IRRITATING TO EYES, SKIN, RESPIRATORY TRACT; MAY CAUSE EYE BURNS.

INGESTION CAN SEVERELY DAMAGE MUCOUS MEMBRANES AND CAUSE PAIN, VOMITING, DIARRHEA, AND CIRCULATORY COLLAPSE.

AVOID SIMULTANEOUS PRESENCE OF SODA ASH AND LIME DUST; THE COMBINATION IN THE PRESENCE OF PERSPIRATION OR MOISTURE WILL CAUSE FORMATION OF CORROSIVE CAUSTIC SODA.

MEDICAL COND. AGGRAVATED BY EXPOSURE:
DATA NOT AVAILABLE.

ROUTES OF ENTRY.....:
INHALATION, INGESTION

CARCINOGENICITY.....:
THE MATERIAL IS NOT LISTED (IARC, NTP, OSHA) AS CANCER CAUSING AGENT.

4. FIRST AID MEASURES

EMERGENCY FIRST AID:

GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.

SKIN: IMMEDIATELY FLUSH THOROUGHLY WITH LARGE AMOUNTS OF WATER.

EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES.

INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED.

INGESTION: DO NOT INDUCE VOMITING; IF CONSCIOUS, GIVE WATER FREELY AND GET MEDICAL ATTENTION.

5. FIRE FIGHTING MEASURES

FLASH POINT (F).....: NONCOMBUSTIBLE

FLAMMABLE LIMITS LEL (%): N/A

FLAMMABLE LIMITS UEL (%): N/A

EXTINGUISHING MEDIA.....:

USE ANY SUITABLE FOR ADJACENT MATERIAL.

FIRE FIGHTING PROCEDURES.:

WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.

WEAR FULL FACE SHIELD

FIRE & EXPLOSION HAZARDS.:

NONE

6. ACCIDENTAL RELEASE MEASURES

SPILL RESPONSE:

MSDS (CONTINUED) - SX0395

PAGE # 2

EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL.

WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE / PERSONAL PROTECTION.

ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE FREE FROM EXPLOSION OR FIRE HAZARDS.

CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE WITHOUT RISK.

TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DISPOSAL.

COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY DATA.

7. HANDLING AND STORAGE

HANDLING & STORAGE:

KEEP CONTAINER TIGHTLY CLOSED.

STORE IN A COOL, DRY, WELL-VENTILATED AREA.

STORE AWAY FROM MINERAL AND ORGANIC ACIDS.

DO NOT GET IN EYES.

AVOID SKIN CONTACT.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION

MATERIAL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME

HOOD OR WITH ADEQUATE VENTILATION.

PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO PREVENT SKIN CONTACT

SAFETY GLASSES WITH SIDE SHIELDS MUST BE WORN AT ALL TIMES.

WORK / HYGENIC PRACTICES:

WASH THOROUGHLY AFTER HANDLING.

DO NOT TAKE INTERNALLY.

EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

EXPOSURE GUIDELINES

OSHA - PEL:

COMPONENT	TWA		STEL		CL		SKIN
	PPM	MG/M3	PPM	MG/M3	PPM	MG/M3	

SODIUM CARBONATE							

ACGIH - TLV:

COMPONENT	TWA		STEL		CL		SKIN
	PPM	MG/M3	PPM	MG/M3	PPM	MG/M3	

SODIUM CARBONATE							

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT (C 760 MMHG): DECOMPOSES
MELTING POINT (C): 851C
SPECIFIC GRAVITY (H2O = 1): 2.53
VAPOR PRESSURE (MM HG): N/A
PERCENT VOLATILE BY VOL (%): N/A
VAPOR DENSITY (AIR = 1): N/A
EVAPORATION RATE (BUAC = 1): N/A
SOLUBILITY IN WATER (%): 22
APPEARANCE: WHITE; GRANULAR OR POWDER

10. STABILITY AND REACTIVITY

STABILITY: YES

HAZARDOUS POLYMERIZATION:
DOES NOT OCCUR

HAZARDOUS DECOMPOSITION: CO2, NA2O

CONDITIONS TO AVOID: CONTACT WITH STRONG ACID MAY RESULT IN VIOLENT REACTION.
STARTS TO DECOMPOSE, LOSING CO2, AT 400C.

MATERIALS TO AVOID:

() WATER
(X) ACIDS
() BASES
() CORROSIVES
() OXIDIZERS
(X) OTHER : ALUMINUM, FLUORINE, PHOSPHORUS PENTOXIDE, SULFURIC ACID

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

ORL-RAT LDLO: 4090 MG/KG IPR-MUS LD50: 117 MG/KG
IHL-MUS LC50: 1200 MG/M3/2H

TOXICOLOGICAL FINDINGS:

TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY PRODUCE ADVERSE
REPRODUCTIVE EFFECTS.
CITED IN REGISTRY OF TOXIC EFFECTS OF SUBSTANCES (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA WASTE NUMBERS:

TREATMENT:

MATERIAL DOES NOT HAVE AN EPA WASTE NUMBER AND IS NOT A LISTED
WASTE, HOWEVER CONSULTATION WITH A PERMITTED WASTE DISPOSAL SITE
(TSD) SHOULD BE ACCOMPLISHED.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE
COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME....:
NON-REGULATED

DOT ID NUMBER.....: NONE

14. REGULATORY INFORMATION

TSCA INVENTORY.....:

THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE TSCA INVENTORY.

COMPONENT	SARA EHS (302)	SARA EHS TPQ (LBS)	CERCLA RQ (LBS)
-----------	----------------------	--------------------------	-----------------------

SODIUM CARBONATE

COMPONENT	OSHA FLOOR LIST	SARA 313	DEMINIMIS FOR SARA 313 (%)
-----------	--------------------	-------------	----------------------------------

SODIUM CARBONATE

15. OTHER INFORMATION

COMMENTS:

NONE

NEPA HAZARD RATINGS:

HEALTH : 1
FLAMMABILITY : 0
REACTIVITY : 0
SPECIAL HAZARDS :

REVISION HISTORY:

08/01/84 12/04/86 10/27/87 06/20/88 03/01/91

= REVISED SECTION

N/A = NOT AVAILABLE

N/E = NONE ESTABLISHED

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT EM SCIENCE BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILL AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.

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MSDS - SX0395

PAGE # 6

"ISSUED BY VWR 01/23/97"

Material Safety Data Sheet for Agricultural Lime

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Agricultural Lime

Chemical Family: Primarily calcium carbonate which may contain a minor amount of calcium oxide and calcium hydroxide.

Revision Date: March, 1997

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Calcium carbonate, CaCO_3	1317-65-3	Total dust, 15 mg/m^3 Respirable fraction, 5 mg/m^3 ***	10 mg/m^3 *
Calcium hydroxide, $\text{Ca}(\text{OH})_2$	1305-62-0	5 mg/m^3	5 mg/m^3
Calcium oxide, CaO	1305-78-8	5 mg/m^3	2 mg/m^3
*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica			
**Unless contains >1% crystalline silica (quartz)			

Agricultural Lime can contain quartz >0.1%. The OSHA PEL for quartz is 10 mg/m^3 respirable dust only.
% $\text{SiO}_2 + 2$

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m^3 .

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base
Specific Gravity:	Approximate range 2.3 to 2.60
Vapor Pressure(mm Hg):	0
Vapor Density:	(Air=1) NA
Evaporation Rate:	NA
Solubility in Water:	0.0014% (25°C)
Appearance and Odor:	Soft white to dark grey powder or granules; faint odor
Melting Point:	Calcium hydroxide-decomposes above 600°C Calcium carbonate-decomposes above 900°C

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Agricultural Lime is non-combustible and not explosive.
Flammable or Explosive Limits: LEL: NA UEL: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: Agricultural Lime is incombustible
Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Agricultural Lime can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has also determined that there is a link between silica exposure and cancer.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance

- allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough are common.

Section V - Health Hazard Data - (Continued)

- c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact:** corrosive
- a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact:** corrosive
- a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
- b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
- c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: A NIOSH approved respirator with dust filtering capability must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

MINERAL FACTORIES & MINERALS CORPORATION
P.O. BOX 1938
SALINAS, CALIFORNIA 93902

PACKING SLIP AND
SHIPPING NOTICE

No. 5537

SHIP TO •

ASHGROVE CEMENT
ATTENTION: GARY WRIGHT
13939 NORTH RIVER GATE ROAD
PORTLAND, OR 97203

Natividad Plant
LOCATION

PREPAID XX		COLLECT		CUSTOMER ORDER NO. SAMPLE		DATE SHIPPED 3-3-97			
RAIL		TRUCK		ROUTING UPS		B/L NUMBER		CAR NUMBER	
								OUR ORDER NO. S-1378	
QUANTITY	NO PALLET	PCS. PER PALLET	WEIGHT PER PC.	DESCRIPTION AND TYPE				NET WEIGHT	
1	pkg.			CRUDE DOLOMITE, #10AG included in packing slip Data Sheet & MSDS				18#	

TARE WEIGHT

_____ DRUMS @ _____ LBS. _____ LBS.
_____ SACKS @ _____ LBS. _____ LBS.
_____ PACKAGING @ _____ LBS. _____ LBS.
_____ PALLETS @ _____ LBS. _____ LBS.

DUNNAGE _____ STRAPPING _____ STRAW _____

SPECIAL INSTRUCTIONS

TOTAL NET 18#

TOTAL TARE _____

TOTAL GROSS _____

PART SHIPMENT _____

COMPLETE SHIPMENT _____

TO ML GENERAL ACCOUNTING (BILLING)

FORM PD 5-38

Appendix33-001532

NATIONAL

REFRACTORIES & MINERALS

MATERIAL SAFETY DATA SHEET

ADDRESS : 1852 Rutan Drive
Livermore, California 94550

LABEL NO. : 1077

MSDS NO. : 0253-6

PRODUCT NAME : DOLOMITE: 1x4; 1x2; 7/8x5/8; 5/8x3/8;
1/4x1/8; 11x16; 3/8 Roofing Rock; #7 AG;
#10 AG; #65 AG; #100 Dolowhite; #200 Dolowhite;
#325 Dolomite (WMB); CBM; Commercial #7;
D220; D307; Dolomark; Dolosand 100;
Glass Grade (all types); Pool Deck (all types)
Pool Grade (all types); Omega Select 16; Redi-Mag

DATE : August 8, 1996

EMERGENCY PHONE: (510) 449-5010

DOT ID NUMBER : NAp

I. INGREDIENTS

Ingredient	%	CAS Number	Exposure Limits		SARA TITLE III, SECTION 313 REPORTABLE
			1995-96 ACGIH TLV's (TWA)	1910.1000 OSHA PEL's (TWA)	
Crystalline silica as quartz	<1	14808-60-7	0.1 mg/m ³	0.1 mg/m ³	No
Dolomite	>99	16389-88-1	NAv	NAv	No

II. PHYSICAL DATA

APPEARANCE : Granular, dry COLOR : White to lt. gray SPECIFIC GRAVITY (gm/cc): 2.0 - 3.5
BOILING POINT: NAp ODOR : None SOLUBILITY IN WATER (%): Nil
MELTING POINT: NAp pH : NAp VAPOR PRESSURE (mm Hg) : NAp

III. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION : Respirator approved by NIOSH/MSHA and adequate for contaminant concentrations encountered.
HAND PROTECTION : Impervious gloves are recommended.
EYE PROTECTION : Safety glasses are recommended.
OTHER : Local exhaust recommended to maintain exposures below TLV's and PEL's.

IV. EMERGENCY MEDICAL PROCEDURES

SKIN: Wash with soap and plenty of water.
EYES: Irrigate immediately with copious amounts of water for 15 minutes. Consult physician if necessary.
INHALATION: Remove to fresh air.

NAp = Not Applicable

NAv = Not Available

HIGH PURITY DOLOMITIC PRODUCTS

AGRICULTURAL LIMING GRADE DOLOMITE

Agricultural Dolomite Liming products are mineral soil conditioners composed principally of calcium and magnesium carbonate. All of National agricultural dolomite lime grades are suitable for direct soil application, without caustic effects, for the correction of soil pH, and to help restore the essential plant micronutrients, calcium and magnesium. #7 Ag and #10 Ag are commonly used as ingredients in various commercial fertilizer mixes.

The rate at which liming materials react with the soil is influenced by both their particle size and by their chemical makeup. #65 Ag combines the desirable effects of fine particle size with a slightly altered chemical composition to achieve a higher acid neutralizing effect than is possible with other sources, such as limestone, dolomite, shell meal, marl or sugar beet lime. The heat process used in the production of #65 Ag converts a small amount of the dolomite to burned lime, which has a very high acid neutralizing value, commonly referred to as its calcium carbonate equivalent, or CCE. When applied to the soil, the burned lime portion of the #65 Ag reacts quickly to provide an immediate neutralizing effect, while the unburned portion reacts more gradually for long-term neutralizing.

National's line of liming products is well established in agricultural markets in California, Oregon, Washington and Hawaii. #65 Ag, sold under the trade name "Redi-Mag", is sacked in easy-to-handle, 40 pound sacks, which are well suited for the consumer market.

Chemical Characteristics (Min.)

	#7 Ag	#10 Ag	#65 Ag	Redi-Mag	(Interim) #70 Ag	(Interim) #90 Ag
Calcium Carbonate (CaCO_3)	54.7%	54.7%	46.0%	46.0%	45.4%	50.4%
Magnesium Carbonate (MgCO_3)	42.6%	42.6%	38.5%	38.5%	32.5%	37.7%
Calcium (Ca) as elemental	21.9%	21.9%	22.7%	22.7%	18.2%	20.2%
Magnesium (Mg) as elemental	12.3%	12.3%	11.8%	11.8%	9.4%	10.9%
Calcium Carbonate Equivalent	103%	103%	113%	113%	77%	90%
Moisture (max.)	2.0%	2.0%	2.0%	2.0%	7.0%	7.0%
Oregon Lime Score	7	61	107	107	72	88
Derived from Dolomite	Yes	Yes	Yes	Yes	Yes	Yes

National Refractories and Minerals
Salinas, California

3/12/97

#10 Dolomite

CCE 100.5

Moisture 0.13

	Individual Retained	Cumulative Retained
10	0.0	0.0
20	26.8	26.8
40	30.8	57.6
100	30.7	88.3

Oregon Lime Score 70

Material Safety Data Sheet for Agricultural Lime

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900
Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Agricultural Lime

Chemical Family: Primarily calcium carbonate which may contain a minor amount of calcium oxide and calcium hydroxide.

Revision Date: March, 1997

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Calcium carbonate, CaCO ₃	1317-65-3	Total dust, 15 mg/m ³ Respirable fraction, 5 mg/m ³ **	10 mg/m ³ *
Calcium hydroxide, Ca(OH) ₂	1305-62-0	5 mg/m ³	5 mg/m ³
Calcium oxide, CaO	1305-78-8	5 mg/m ³	2 mg/m ³
*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica **Unless contains >1% crystalline silica (quartz)			

Agricultural Lime can contain quartz >0.1%. The OSHA PEL for quartz is 10mg/m³ respirable dust only.
% SiO₂+2

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m³.

ACGIH	American Conference of Governmental Industrial Hygienists
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base
Specific Gravity:	Approximate range 2.3 to 2.60
Vapor Pressure(mm Hg):	0
Vapor Density:	(Air=1) NA
Evaporation Rate:	NA
Solubility in Water:	0.0014% (25°C)
Appearance and Odor:	Soft white to dark grey powder or granules; faint odor
Melting Point:	Calcium hydroxide-decomposes above 600°C Calcium carbonate-decomposes above 900°C

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Agricultural Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Agricultural Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Agricultural Lime can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has also determined that there is a link between silica exposure and cancer.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance

- allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough are common.

Section V - Health Hazard Data - (Continued)

- c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact:** corrosive
- a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
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- b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
- c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: A NIOSH approved respirator with dust filtering capability must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

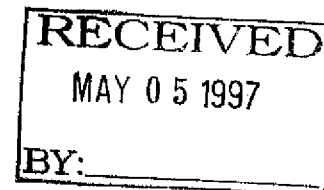
267
National Sanitary Supply Co.
P.O. Box 61126
Los Angeles, Ca 90061
(213) 770-1970

4/28/97
2813 TOTONCHY, TALAL

193150

ASH GROVE CEMENT WEST, INC.

13939 N RIVERGATE BLVD
PORTLAND OR 97203-6608



Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal OSHA Hazard Communication Final Standard 29 CFR 1910. 1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnesses in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias
Executive Administration

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061
Emergency No. 1-800-535-5053 (INFOTRAC)

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: SUPER SHINE AEROSOL
Product Code: 136-1
Type Of Product: WAX POLISH

Date Issued: 04/12/93
Supersedes: 10/02/92
National Item#: 3221XX

SECTION 2. INGREDIENTS

	CAS #	SARA III LIST	OSHA PEL (PPM)	ACGIH TLV (PPM)
PETROLEUM DISTILLATE	8052-41-3	NO	100	100
ISOBUTANE/PROPANE	75-28-5	NO	800	800
BLEND	74-98-6	NO	1000	1000

SECTION 3. PHYSICAL DATA

Vapor Density (air=1): NE
Evaporation Rate: NE
Specific Gravity (H2O=1) CONCENTRATE ONLY: 0.980
Boiling Point F: N/A
Solubility in Water: PARTIAL
Water Reactive: NO
Vapor pressure PSIG @ 70F(AEROSOLS): MAX. 60
Vapor Pressure (Non-Aerosols)(mm Hg and Temperature: NA
Appearance and Odor: CREAM COLOR, WITH LEMON FRAGRANCE.

Section 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point and Method Used (Non-Aerosols): NA
Auto Ignition Temperature, F: N/E
Flammable Limits in Air, Volume %: LOWER (LEL) UPPER (UEL)
Extinguisher Media: FOAM, DRY CHEMICAL, CARBON DIOXIDE, WATER FOG.
Special Firefighting Procedures: SELF CONTAINED BREATHING APPARATUS.
Unusual Fire And Explosion Hazards: DO NOT EXPOSE AEROSOLS TO TEMPERATURES
ABOVE 130 F OR THE CONTAINER MAY RUPTURE.

SECTION 5. REACTIVITY DATA

Stability: STABLE
Conditions to Avoid: OPEN FLAME, WELDING ARCS, HEAT, SPARKS.
Incompatibility (materials to avoid): STRONG OXIDIZERS.
Hazardous Decomposition: CO, CO2.
Hazardous Polymerization: WILL NOT OCCUR
Conditions to Avoid: OPEN FLAME, WELDING ARCS, HEAT, SPARKS.

Product Name: SUPER SHINE AEROSOL

National Item# 3221

Date Issued: 04/12/93

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

Steps to Be Taken If Material Is Spilled or Released: ABSORB WITH SUITABLE MEDIUM. INCINERATE OR LANDFILL ACCORDING TO LOCAL, STATE, OR FEDERAL REGULATIONS. DO NOT FLUSH TO SEWER.

Waste Disposal Methods: AEROSOL CANS WHEN VENTED TO ATMOSPHERIC PRESSURE THROUGH NORMAL USE, POSE NO DISPOSE HAZARD.

Precautions to Taken in Handling and Storage: DO NOT PUNCTURE OR INCINERATE CONTAINERS. DO NOT STORE AT TEMPERATURES ABOVE 130F.

Other Precautions and/or Special Hazards: AVOID FOOD CONTAMINATION. KEEP OUT OF REACH OF CHILDREN. AVOID PLASTICS. REMOVE IGNITION SOURCES. AVOID BREATHING VAPORS.

SECTION 7. HEALTH HAZARD DATA

Primary Routes of Entry: INHALATION, SKIN ABSORPTION

Acute Effects:

Inhalation: EXCESSIVE INHALATION OF VAPORS CAN BE HARMFUL AND MAY CAUSE HEADACHE, DIZZINESS, ASPHYXIA. ANESTHETIC EFFECTS AND POSSIBLE UNCONSCIOUSNESS.

Eye Contact: SLIGHT IRRITATION.

Skin Contact: PRESSIBLE MILD IRRITATION DUE TO DEFATTING OF SKIN.

Ingestion: POSSIBLE CHEMICAL PNEUMONITIS IF ASPIRATED INTO LUNGS. NAUSEA.

Chronic Effects: EFFECTS DUE TO EXCESSIVE EXPOSURE TO THE RAW MATERIALS OF THIS MIXTURE) PETROLEUM DISTILLATE HAS CAUSED KIDNEY INJURY IN LABORATORY ANIMALS. STOMACH AND INTESTINE IRRITANT.

Medical Conditions Generally Aggravated by Exposure: MAY AGGRAVATE EXISTING EYE, SKIN, OR UPPER RESPIRATORY CONDITIONS.

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: FLUSH WITH WATER FOR 15 MINUTES. IF IRRITATED, SEE MEDICAL ATTENTION.

Skin Contact: WASH WITH SOAP AND WATER. IF IRRITATED, SEE MEDICAL ATTENTION.

Inhalation: REMOVE TO FRESH AIR. RESUSCITATE IF NECESSARY. GET MEDICAL ATTENTION.

Ingestion: DRINK TWO LARGE GLASSES OF WATER. GET IMMEDIATE MEDICAL ATTENTION.

Product Name: SUPER SHINE AEROSOL

National Item# 3221

Date Issued: 04/12/93

SECTION 9. SPECIAL PROTECTION INFORMATION
-----Respiratory Protection (Specify Type): IF VAPOR CONC. EXCEEDS TLV, USE
RESPIRATOR APPROVED BY U.S. BUREAU OF MINES FOR ORGANIC VAPOR.

Protective Gloves: LATEX, IF SKIN EASILY IRRITATED.

Eyes Protection: SAFETY GLASSES RECOMMENDED.

Ventilation Requirements: ADEQUATE VENTILATION TO KEEP VAPOR CONCENTRATION
BELOW TLV.

Other Protective Clothing and Equipment: NONE

Hygienic Work Practices: WASH WITH SOAP AND WATER BEFORE HANDLING FOOD.
REMOVE CONTAMINATED CLOTHING.-----
SECTION 10. ADDITIONAL INFORMATION PRECAUTIONS
-----HMIS RATING: HEALTH -2 FLAMMABILITY -2 REACTIVITY -0
PERSONAL PROTECTION -B

NFPA RATING: HEALTH -2 FLAMMABILITY-2 REACTIVITY -0 SPECIAL -0

Acute -YES Chronic -NO Fire -YES Press. Release -YES Reactive -NO
-----THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST
DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT
UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF
APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE
PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS
MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD
COMMUNICATION REGULATION.

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION



CLEAN ACROSS AMERICA AND
THROUGHOUT THE WORLD™

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301

RECEIVED

MAY 08 1997

ASHGROVE CEMENT WEST INC (366)
13939 N RIVERGATE BLVD
PORTLAND, OR 97203

04/30/97

ISSUE DATE: 01/26/96

SUPERSEDES:

ZEP SPIRIT II

PRODUCT NO.: 0879

Cleaner - Disinfectant - Deodorant

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(770) 439-4200

(770) 432-2873

(770) 424-4789

(770) 392-1480

(770) 455-8160

(770) 552-8836

NON-OFFICE HOURS, WEEKENDS
AND HOLIDAYS, PLEASE CALL YOUR
LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(770) 922-0923

CHEMTREC:

1-800-424-9300

DISTRICT OF COLUMBIA:

(202) 483-7616

TOLL-FREE - ALL CALLS RECORDED

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

- @ * DIETHYLENE GLYCOL MONOBUTYL ETHER * 2-(2-butoxyethoxy)-ethanol; butyl carbitol; CAS# 112-34-5; RTECS# KJ910000; OSHA PEL-N/D
* TETRASODIUM ETHYLENEDIAMINE TETRAACETATE * ethylenedinitrilo tetraacetic acid, tetrasodium salt; EDTA; CAS# 64-02-8; RTECS# AH4025000; OSHA PEL N/D

TLV
(PPM)

EFFECTS
(SEE REVERSE)

% IN
PROD.

N/D

EIR

5-15

N/D

IRR

< 5

@ Identifies chemicals listed under SARA-Section 313 for release reporting

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product, particularly in its concentrated form, may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or blistering. Overexposure by inhalation may cause respiratory irritation. Exposure may aggravate existing skin disorders such as dermatitis.

Chronic Effects of Overexposure:

Repeated or prolonged skin contact may produce chronic inflammation or dermatitis, characterized by redness, scaling or itching. None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

Est'd PEL/TLV: Not established

Primary Routes of Entry: Inh, Skin.

HMIS Codes: HEALTH 2; FLAM. 0; REACT. 0; PERS. PROTECT. B; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

Skin: Flush contaminated skin with plenty of water. Consult a physician if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once.

Inhale: Move exposed person to fresh air. If irritation persists, get medical attention promptly.

Ingest: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing: Wear nitrile gloves or use gloves with demonstrated resistance to the ingredients in this product.

Eye Protection: Wear tight-fitting splash-proof safety glasses especially if contact lenses are worn.

Respiratory Protection: No extra measures are needed if ventilation is adequate.

Ventilation: Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

Boiling Point (°F): ~ 220

Percent Volatile by Volume (%): 97

Solubility in Water: COMPLETE

Appearance and Odor: A THIN, CLEAR GREEN LIQUID WITH A CITRUS FRAGRANCE.

Specific Gravity: 1.006

Vapor Density (air = 1): N/A

pH (concentrate): 11.7-12.4

Vapor Pressure (mmHg):

Evaporation Rate (WATER = 1):

pH (use dilution of):

N/A

1.0

N/A

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used): None (TCC)

Flammable Limits: LEL N/A UEL N/A

Extinguishing Media: Noncombustible.

Special Fire Fighting: Fire exposed drums should be cooled with stream of water.

Unusual Fire Hazards: Wear self-contained positive pres. breathing apparatus.

SECTION VII - REACTIVITY DATA

Stability: Stable
Incompatibility (avoid): Heat, sunlight, strong oxidizers, and acids.
Polymerization: Will not occur.
Hazardous Decomposition: Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer. Thoroughly rinse spill area with water.

Waste Disposal Method:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps. between 40-120 degrees F. Keep product away from skin and eyes. Do not breathe spray mists or vapors. Clothing or shoes which become contaminated with substance should be removed promptly and not reworn until thoroughly cleaned. Keep out of the reach of children.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME Small sizes one gallon or less may be shipped as ORM-D: NONE

DOT Hazard Class: N/A

DOT I.D. Number: N/A

DOT Label/Placard: NONE

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container): NONE

NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS USED IN THE MSDS:
BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.

CAS #: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).

DESIGNATIONS: Chemical and common names of hazardous ingredients.

EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLVs and OSHA PEL's (TWA, STEL and ceiling limits).

ACGIH: American Conference of Governmental Industrial Hygienists.

CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit - A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure limits.

(S) SKIN: Skin contact with substance can contribute to overall exposure.

STEL: Short Term Exposure Limit - Maximum concentration

for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX: Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this product.

N/D: Not Determined - Insufficient information for a determination for this item.

RTECS#: Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.

SARA: Superfund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated exposure.

TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.

EST'D PEL/TLV: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of vapors.

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)

PERCENT VOLATILE: The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure.

SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VI: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition or fire.

INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing excess pressure and heat.

STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act

RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.

TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

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(Notice Revised 8/91)

VWR SCIENTIFIC PRODUCTS
1310 GOSHEN PARKWAY
WEST CHESTER, PA 19380
TELEPHONE: (610)431-1700

000000000

ATTN HOWARD MATHESON
ASH GROVE CEMENT

13939 N RIVERGATE BLVD
PORTLAND OR 97203
05-22-97

DEAR CUSTOMER:

ENCLOSED ARE THE MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR THE PRODUCT(S) THAT YOUR COMPANY RECENTLY PURCHASED FROM VWR SCIENTIFIC PRODUCTS. PLEASE FORWARD THESE MSDS(S) TO YOUR SAFETY OFFICER OR OTHER INDIVIDUAL IN YOUR ORGANIZATION RESPONSIBLE FOR IMPLEMENTING THESE REGULATIONS.

"ALL DATA OR INFORMATION REGARDING THE PARTICULAR PRODUCT YOU HAVE PURCHASED FROM VWR SCIENTIFIC PRODUCTS, WHICH IS PROVIDED IN THE ENCLOSED MATERIAL SAFETY DATA SHEET, IS OFFERED GRATUITOUSLY AND IN GOOD FAITH AS ACCURATE, BUT IS FURNISHED WITHOUT GUARANTY. VWR SCIENTIFIC PRODUCTS MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, YOU SHOULD PERFORM YOUR OWN INVESTIGATION AND INDEPENDENT VERIFICATION. THE CONDITIONS OF THE USE OF THE PRODUCT, AND THE SUITABILITY OF THE PRODUCT FOR YOUR PARTICULAR PURPOSES, ARE BEYOND THE CONTROL OF VWR SCIENTIFIC PRODUCTS. THUS, ALL RISKS OF THE USE OF THE PRODUCT ARE THEREFORE ASSUMED BY YOU, THE USER, EXCEPT AS TO SUCH WARRANTIES AS MAY BE PUBLISHED BY VWR SCIENTIFIC PRODUCTS, WITH RESPECT TO A PARTICULAR PRODUCT. VWR SCIENTIFIC PRODUCTS EXPRESSLY DISCLAIMS ALL WARRANTIES OF EVERY KIND, AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. VWR SCIENTIFIC PRODUCTS SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATEVER NATURE, DIRECTLY OR INDIRECTLY, RESULTING FROM USE OF THE PRODUCT, OR FROM THE PUBLICATION OF USE OF OR RELIANCE UPON DATA CONTAINED IN THE ENCLOSED MSDS. NOTHING IN THE MSDS IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS, OR WHICH EXTEND LICENSES UNDER VALID PATENTS. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO PASS ON TO YOUR CUSTOMER THE INFORMATION CONTAINED IN THE MSDS, AND GIVE TO THEM APPROPRIATE WARNINGS AND SAFE HANDLING INSTRUCTIONS AS NECESSARY TO MAKE THE PRODUCT SAFE FOR THE INTENDED USES BY YOUR CUSTOMER.

THANK YOU,

VWR SCIENTIFIC PRODUCTS

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05-22-97

CATALOG
NUMBER

MSDS
FORM-DOC
NUMBER

EM-MX0400-2

MX0398

MATERIAL SAFETY DATA SHEET

EM SCIENCE

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER.....:

EM SCIENCE
A DIVISION OF EM INDUSTRIES
P.O. BOX 70
480 DEMOCRAT RD.
GIBBSTOWN, N.J. 08027

PREPARATION DATE.: 04/11/95

DATE MSDS PRINTED.: OCT 19, 1995

INFORMATION PHONE NUMBER.: 609-423-6300
HOURS: MON. TO FRI. 8:30-5
CHEMTREC EMERGENCY NUMBER: 800-424-9300
HOURS: 24 HRS A DAY

CATALOG NUMBER(S):

MX0398 MX0400 MX0405 4404

PRODUCT NAME.....:

MERCURY

SYNONYMS.....:

QUICK SILVER

CHEMICAL FAMILY...:

METALLIC ELEMENT

FORMULA.....:

HG

MOLECULAR WEIGHT.:

200.59

COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS #	APPR %
MERCURY	7439-97-6	100%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

VAPOR HAZARDOUS.

MAY BE FATAL IF INHALED.

CAN CAUSE KIDNEY, HEART, LUNG AND BRAIN DAMAGE.

IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.

APPEARANCE.....:

SILVERY-GRAY; HEAVY LIQUID

MSDS (CONTINUED) - MX0398

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SYMPTOMS OF EXPOSURE:

HIGHLY TOXIC BY VAPOR INHALATION; SYMPTOMS: METALLIC TASTE, NAUSEA, ABDOMINAL PAIN, DIARRHEA, HEADACHE, ALBUMINUREA. PROLONGED OR REPEATED EXPOSURE MAY CAUSE MUSCLE TREMORS, CENTRAL NERVOUS SYSTEM DISTURBANCES, KIDNEY, HEART, LUNG AND BRAIN DAMAGE.
CAN BE ABSORBED THROUGH SKIN AND GI TRACT.

MEDICAL COND. AGGRAVATED BY EXPOSURE:
DATA NOT AVAILABLE.

ROUTES OF ENTRY.....:
INHALATION, INGESTION OR SKIN CONTACT.

CARCINOGENICITY.....:
THE MATERIAL IS NOT LISTED (IARC, NTP, OSHA) AS CANCER CAUSING AGENT.

4. FIRST AID MEASURES

EMERGENCY FIRST AID:

GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.
SKIN: WASH THOROUGHLY WITH SOAP AND WATER.
EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES.
INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED.
INGESTION: IF CONSCIOUS, DRINK WATER AND INDUCE VOMITING IMMEDIATELY AS DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

5. FIRE FIGHTING MEASURES

FLASH POINT (F).....: NONCOMBUSTIBLE
FLAMMABLE LIMITS LEL (%): N/A
FLAMMABLE LIMITS UEL (%): N/A
EXTINGUISHING MEDIA.....:
USE ANY SUITABLE FOR ADJACENT MATERIAL.

FIRE FIGHTING PROCEDURES.:
WEAR SELF-CONTAINED BREATHING APPARATUS.

FIRE & EXPLOSION HAZARDS.:
EMITS EXTREMELY TOXIC MERCURY VAPOR AT HIGH TEMPERATURES.

6. ACCIDENTAL RELEASE MEASURES

SPILL RESPONSE:

EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL.
 WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE /
 PERSONAL PROTECTION.
 ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE
 FREE FROM EXPLOSION OR FIRE HAZARDS.
 CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE
 WITHOUT RISK.
 TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER
 DISPOSAL.
 COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING
 RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE
 QUANTITY AND OTHER REGULATORY DATA.

SX0866

CHEMIZORB--HG MERCURY SPILL CLEAN UP KIT

7. HANDLING AND STORAGE

HANDLING & STORAGE:

KEEP CONTAINER CLOSED AND AWAY FROM HEAT.
 DO NOT BREATHE VAPOR.
 DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION
 MATERIAL MUST BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD
 OR WITH EQUIVALENT VENTILATION.
 PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO
 PREVENT SKIN CONTACT.
 SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES.

WORK / HYGENIC PRACTICES:

WASH THOROUGHLY AFTER HANDLING.
 DO NOT TAKE INTERNALLY.
 EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

EXPOSURE GUIDELINES

OSHA - PEL:

COMPONENT	TWA		STEL		CL		SKIN
	PPM	MG/M3	PPM	MG/M3	PPM	MG/M3	
MERCURY							

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0.05

X

ACGIH - TLV:

COMPONENT	PPM	TWA MG/M3	PPM	STEL MG/M3	PPM	CL MG/M3	SKIN
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MERCURY

0.025

X

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT (C 760 MMHG): 357C
MELTING POINT (C): -39C
SPECIFIC GRAVITY (H2O = 1): 13.55
VAPOR PRESSURE (MM HG): 0.001 20C
PERCENT VOLATILE BY VOL (%): 99+% SUBLIMES
VAPOR DENSITY (AIR = 1): N/A
EVAPORATION RATE (BUAC = 1): N/A
SOLUBILITY IN WATER (%): INSOLUBLE
APPEARANCE:
SILVERY-GRAY; HEAVY LIQUID

10. STABILITY AND REACTIVITY

STABILITY: YES

HAZARDOUS POLYMERIZATION:
DOES NOT OCCUR

HAZARDOUS DECOMPOSITION.:
HG VAPORS

CONDITIONS TO AVOID:

HEAT

MATERIALS TO AVOID:

() WATER
() ACIDS
() BASES
() CORROSIVES
() OXIDIZERS
(X) OTHER :
ACETYLENIC COMPOUNDS, AMMONIA, ETHYLENE OXIDE

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

MSDS (CONTINUED) - MX0398

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IHL-MAN TCLO: 44.3 MG/M3/8H IHL-RBT LCLO: 29 MG/M3/30H

TOXICOLOGICAL FINDINGS:

TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY CAUSE TUMORS
AND PRODUCE ADVERSE MUTAGENIC AND REPRODUCTIVE EFFECTS.
CITED IN REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA WASTE NUMBERS: U151 D009

TREATMENT:

SPECIFIED TECHNOLOGY - CONTACT YOUR LOCAL PERMITTED WASTE
DISPOSAL SITE (TSD) FOR PERMISSIBLE TREATMENT SITES.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE
COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME....:
MERCURYDOT ID NUMBER.....:
UN2809

14. REGULATORY INFORMATION

TSCA STATEMENT

THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE TSCA INVENTORY.

COMPONENT	SARA EHS (302)	SARA EHS TPQ (LBS)	CERCLA RQ (LBS)
MERCURY			1

COMPONENT	OSHA FLOOR LIST	SARA 313	DEMINIMIS FOR SARA 313 (%)
MERCURY	Y	Y	1.0

15. OTHER INFORMATION

MSDS (CONTINUED) - MX0398

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COMMENTS:

MERCURY AND MERCURY COMPOUNDS ARE LISTED AS KNOWN TO THE STATE
OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

NFPA HAZARD RATINGS:

HEALTH : 3
FLAMMABILITY : 0
REACTIVITY : 0
SPECIAL HAZARDS :

REVISION HISTORY:

12/01/81 09/12/86 10/27/87 03/01/91 08/29/91 05/14/92 07/06/93
12/21/94

| = REVISED SECTION
N/A = NOT AVAILABLE
N/E = NONE ESTABLISHED

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT EM SCIENCE BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILL AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.

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"ISSUED BY VWR 05-22-97"

**MATERIAL SAFETY DATA SHEET****PRODUCT NAME AND COMPANY IDENTIFICATION**

MANUFACTURER: National Refractories & Minerals Corporation
1852 Rutan Drive
Livermore, California 94550-7635

PRODUCT(S): Lo-Erode, Lo-Erode CV,
Lo-Erode GM, Megolite 3-GM

DATE: June 30, 1997

TELEPHONE No.:

MSDS No.: 0019

EMERGENCY: (510) 449-5010

REVISION No.: 5

INFORMATION: (510) 294-7544

PREPARED BY: Corporate Environmental Services

LABEL No.: 3072

COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>Weight %</u>	<u>CAS Number</u>	<u>'96 ACGIH TLV</u>	<u>OSHA PEL</u>
Silica, crystalline cristobalite	<15	14464-46-1	0.05 mg/m ³	0.05 mg/m ³
Alumino silicates	>45	66402-68-4	NE	NE
Cement, calcium aluminat	<40	65997-16-2	NE	NE

At very high temperatures such as during refractory use, other/additional forms of silica (such as quartz, cristobalite, tridymite, amorphous) may be formed, triggering other applicable exposure guidelines. In addition, refractory may become contaminated with other hazardous substances (e.g., metals, alkaline materials). The specific processing and use of this refractory should be fully evaluated to assess the entire scope of health hazards.

Note: 1) TLV and PEL values given above are 8-hour, time-weighted averages, unless otherwise specified.

2) NE = None Established, and means that the substance is not assigned a specific TLV or PEL. Substance regulated by OSHA as particulates not otherwise regulated (PNOR, PELs - 15 mg/m³ total dust, 5 mg/m³ respiratory fraction) and by ACGIH as particulates not otherwise classified (PNOC, TLV - 10 mg/m³ total dust, 3 mg/m³ respirable fraction) and is considered a nuisance dust.

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Granular mix, practically odorless. As-manufactured product does not pose significant fire hazard. Refractory particulates formed during processing, installation, maintenance procedures and/or tear-out may be irritating to the skin, eyes and respiratory tract, and may cause pulmonary system effects. Potential for cancer and silicosis exists for long-term exposures to product particulates. Product is noncombustible and stable.

PRIMARY ROUTES OF ENTRY: Inhalation: Yes. Skin: Yes. Ingestion: No. Other: No.

EYE CONTACT: Particulates may cause slight to moderate irritation. Abrasive action of dust can damage eyes. Cement dust and/or wet, unhardened product can cause alkali burns.

SKIN CONTACT: May cause irritation. Cement dust and/or wet, unhardened product can dry the skin and cause alkali burns.

INHALATION: Inhalation of airborne particulates may cause slight to moderate irritation of mucous membranes. Inhalation of cement dust can irritate the respiratory tract and cause alkali burns.

INGESTION : Ingestion is unlikely. If ingested in sufficient quantities, may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting, abdominal pain and diarrhea.

CHRONIC : The prolonged inhalation of dusts containing crystalline silica may result in the development of disabling pulmonary fibrosis known as silicosis. Silicosis is a chronic disease characterized by generalized fibrotic changes and the development of nodules in both lungs, and clinically by shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, increased susceptibility to tuberculosis, and characteristic x-ray findings.

CARCINOGENICITY : IARC has listed crystalline silica from occupational sources as a Group 1 carcinogen. A Group 1 carcinogen is one in which there is sufficient evidence for carcinogenicity in humans. NTP has listed crystalline silica as reasonably anticipated to be a carcinogen.

SIGNS AND SYMPTOMS OF OVEREXPOSURE : Irritation, shortness of breath, decreased chest expansion, dry cough, fatigue, dyspnea, cyanosis, loss of appetite, chest pain, total incapacity to work.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE (to particulates): Preexisting diseases or other conditions of the lungs, skin, eyes, and other mucous membranes. Exposure to product dust in conjunction with exposure to other potential carcinogens (such as cigarette smoking) may have a synergistic effect.

4. FIRST AID MEASURES

INHALATION : Immediately remove victim from the adverse environment to fresh air and seek medical attention.

EYE CONTACT : Immediately flush with large amounts of running water as needed. If symptoms persist, seek medical attention.

SKIN CONTACT : If dust gets on skin, wash contaminated area with soap and water. Remove and wash contaminated clothing. If rash, irritation, or other symptoms persist, seek medical attention.

INGESTION : Ingestion is an unlikely route of exposure. If particles are ingested and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting for a doctor, since particles may be aspirated into the lungs. Seek immediate medical attention.

5. FIRE FIGHTING MEASURES

FLASH POINT : Not applicable. **FLASH POINT METHOD USED :** Not applicable.

FLAMMABLE LIMITS : Not applicable. **LEL :** Not applicable. **UEL :** Not applicable.

AUTOIGNITION : Not applicable.

GENERAL HAZARD : This refractory product is noncombustible and does not pose fire or explosion hazards, and will not ignite or contribute to the intensity of a fire.

EXTINGUISHING MEDIA : As appropriate for surrounding fire.

FIRE FIGHTING INSTRUCTIONS : As appropriate for surrounding fire.

FIRE FIGHTING EQUIPMENT : As appropriate for surrounding fire. Generally, fire fighters should wear full turn-out (bunker) gear and full respiratory protection (self-contained breathing apparatus-SCBA). Wear SCBA with full facepiece, operated in the positive pressure mode when fighting fires.

HAZARDOUS COMBUSTION PRODUCTS : Not applicable.

UNUSUAL FIRE AND EXPLOSION HAZARDS : Product requires the addition of water during installation. This water is driven out by heat during initial heat-up. Too fast a heating rate may cause the development of excess steam pressure which could then result in a rupture or explosion.

8. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If there is a spill of product, installation, maintenance, or tear-out material, the following precautions should be taken: Clean up using methods which avoid dust generation. If a vacuum is used, exhaust air should be filtered by a high-efficiency particulate air (HEPA) filter. Compressed air should not be used to clean up spills. During cleanup, skin and eye contact and inhalation of dust should be avoided. Provide local exhaust or dilution ventilation as required. When necessary, wear appropriate personal protective equipment (see Section 8) during clean-up operations. Collect material in a compatible and appropriately labeled container. For small dry spills, place material into clean dry container with a clean shovel, and cover. Comply with federal, state, and local regulations regarding reporting of spills. Dispose of material from processing, installation, maintenance, or tear-out operations in accordance with applicable federal, state, and local regulations (see Section 13).

9. HANDLING AND STORAGE

STORAGE TEMPERATURE AND PRESSURE: Not applicable.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store in a dry area. Minimize dust generation and avoid inhalation and contact with dusts during processing, installation, maintenance, and/or tear-out. After handling of dusts from processing, installation, maintenance, and/or tear-out, wash exposed skin areas thoroughly. Wash clothing contaminated with dusts.

10. EXPOSURE CONTROL AND PERSONAL PROTECTION

NOTE: Dusts generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g., metals, alkali materials). Evaluation of specific processes should be performed by a qualified health and safety professional to determine appropriate controls and personal protective equipment to minimize exposure and contact.

RESPIRATORY PROTECTION: Use an appropriate NIOSH/MSHA-approved respirator if airborne contaminant concentrations exceed applicable OSHA PEL or ACGIH TLV limits (see Section 2 for PELs and TLVs) or other industry standards or guidelines on exposure. If respiratory protection is required, all appropriate requirements as set forth in 29 CFR 1910.134 must be met. A qualified health and safety professional should be consulted for respirator selection.

PROTECTIVE GLOVES: Use as needed to prevent skin contact.

EYE PROTECTION: Use safety glasses and/or dust-proof safety goggles to prevent contact with dust.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Clothing which minimizes skin exposure.

ENGINEERING CONTROLS: Use local and/or general dilution ventilation, as needed, to reduce employee exposures to below applicable OSHA PELs and ACGIH TLVs (see Section 2 for PELs and TLVs).

WORK/HYGIENE PRACTICES: Use good personal hygiene when handling this product. Wash hands after use, before smoking, or before using the toilet.

11. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT:	Not applicable.	APPEARANCE:	Granular.
MELTING POINT:	>2000°F	ODOR:	None.
FREEZING POINT:	Not applicable.	pH:	Wet, unhardened product may exceed 11.
VAPOR PRESSURE:	Not applicable.	SPECIFIC GRAVITY:	2.0 - 3.0
VAPOR DENSITY:	Not applicable.	SOLUBILITY IN WATER:	<5%

MOLECULAR WT. : Not applicable.

POUNDS PER GALLON :

Not applicable.

% VOLATILES : Not applicable.

EVAPORATION RATE :

Not applicable.

10. STABILITY AND REACTIVITY**STABILITY:**

Stable.

CONDITIONS TO AVOID :

Not applicable.

HAZARDOUS POLYMERIZATION :

Will not occur.

CONDITIONS TO AVOID:

Not applicable.

INCOMPATIBILITY :

Strong acids and strong alkalis. Strong acids may react violently with dry or wet, unhardened product.

HAZARDOUS DECOMPOSITION :

Not applicable.

11. TOXICOLOGICAL INFORMATION

For aluminosilicates: The toxic dose threshold (TD_{Lo}) for the rat was reported as 90 mg/kg, by the intrapleural route. Tumorigenic effects on the respiratory system were noted.

For crystalline silica: The human lethal airborne concentration threshold (LC_{Lo}) was reported as 400 particles per cubic centimeter with intermittent exposure over 4 years. Fibrosis of the lungs was noted as the toxic effect.

In another study, the human lethal airborne concentration threshold was reported as 16 mppcf with intermittent 8-hour exposures over 17.9 years. Toxic effects noted were fibrosis, cough, and dyspnea.

The toxic dose threshold (TD_{Lo}) for the rat was reported as 90 mg/kg, by the intrapleural route. Tumorigenic effects noted were lymphoma including Hodgkin's disease.

When administered as a single intrapleural injection, cristobalite or tridymite, with particles in the respirable range, induced malignant lymphomas in rats of both sexes.

12. ECOLOGICAL INFORMATION

Dusts of as-manufactured refractory product have a low order of aquatic toxicity (rating TLM96: over 1000 ppm), are insoluble, and are not very mobile. Based upon this information, it is not believed to be a significant threat to the environment if accidentally released on land or into water. However, dust and material generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g., metals, alkaline materials). Evaluation of dust and material from specific processes should be performed by a qualified environmental professional to determine if an environmental threat exists in the case of a release.

13. DISPOSAL CONSIDERATIONS**WASTE DISPOSAL METHOD:**

The as-manufactured refractory or refractory dust is not considered a hazardous waste as defined by 40 CFR 261. However, dust and material generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g., metals, alkali materials). Therefore, appropriate waste analysis may be necessary to determine proper disposal. Waste characterization and disposal/treatment methods should be determined by a qualified environmental professional in accordance with applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

DOT Proper Shipping Name (49 CFR 172.101) :

Not applicable.

DOT Hazard Class (49 CFR 172.101) :

Not applicable.

UNNA Code (49 CFR 172.101) :

Not applicable.

DOT Labels Required (49 CFR 172.101):
DOT Placards Required (49 CFR 172.504):

Not applicable.
Not applicable.

15. REGULATORY INFORMATION

CAA Title VI: This product does not contain nor was it manufactured using ozone-depleting chemicals.

TSCA Status: All components used in this product are on the Toxic Substances Control Act Inventory.

CERCLA Hazardous Substances: None.

SARA Title III:

Section 302 Extremely Hazardous Substances: None.

Section 311/312 Hazardous Categories: Immediate (Acute).

Section 313 Toxic Chemicals: None.

RCRA Status: Not regulated.

California Proposition 65: The California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) requires that the Governor of California publish a list of chemicals known to the State to cause cancer or reproductive harm.

Silica is on the Governor's Proposition 65 list.

Components used in this product may contain minor trace amounts of inherent naturally occurring elements (such as, but not limited to, arsenic, cadmium) that are on the Governor's Proposition 65 list.

INTERNATIONAL:

IARC: IARC has listed respirable crystalline silica from occupational sources as a Group 1 carcinogen.

CANADA (WHMIS): All components used in this product are listed on the Domestic Substances List (DSL)

EUROPEAN COMMUNITY: All components used in this product are listed on ECHOIN, the European Core Inventory.

AUSTRALIA: All components used in this product are listed on the AICS inventory.

JAPAN: Silicon is listed on MITI, the Ministry of International Trade Industry.

16. OTHER INFORMATION

DESCRIPTION: This product is a granular refractory mix. Metal fibers and/or organic fibers are occasionally added to this product to enhance service conditions. These fibers are essentially nontoxic.

NFPA RATING: FLAMMABILITY: 0 TOXICITY: 1 REACTIVITY: 0

HMIS RATING: FLAMMABILITY: 0 HEALTH: 1 REACTIVITY: 0

All information appearing here is based on data believed to be reliable. However, THE INFORMATION AND THE PRODUCT ARE PROVIDED WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO REPRESENTATIONS AND WARRANTIES REGARDING ACCURACY OR CORRECTNESS, THE EFFECTS OF USING THE PRODUCT, THE RESULTS TO BE OBTAINED, FITNESS FOR A PARTICULAR PURPOSE, OR THE SAFETY OR TOXICITY OF THE PRODUCT. It is the users' responsibility to determine the safety, toxicity, and suitability for their use of the product and to comply with all applicable statutes and regulations. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control. For this and other reasons, National Refractories & Minerals Corporation does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of, relating to, or in any way connected with the handling, storage, use, or disposal of this product. This MSDS is not intended as a license to operate under, or a recommendation to infringe on, any patents. Appropriate warnings and safe handling instructions should be provided to handlers and users.

REFERENCES:

Lewis, R. J., *Hawley's Condensed Chemical Dictionary*, Twelfth Edition, Van Nostrand Reinhold Co., Inc., NY.

Material Safety Data Sheets-Preparation, ANSI Z400.1-1993, American National Standards Institute, NY.

Threshold Limit Values and Biological Exposure Indices for Chemical Substances and Physical Agents, ACGIH, OH.

Sax, N. I., *Dangerous Properties of Industrial Materials*, Ninth Edition, Van Nostrand Reinhold Co., Inc., NY.

Manufacturers/Suppliers Material Safety Data Sheets on raw materials used.

LEGEND

ACGIH	American Conference of Governmental Industrial Hygienists	atm	atmosphere
AICS	Australian Inventory of Chemical Substances	cm	centimeter
CAS	Chemical Abstract Services	gm	gram
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	in	inch
CFR	Code of Federal Regulations	kg	kilogram
DOT	Department of Transportation	lb	pound
DSL	Domestic Substances List (Canada)	m ³	cubic meter
ECORN	European Core Inventory	mg	milligram
EPA	Environmental Protection Agency	ml	milliliter
IARC	International Agency for Research on Cancer	mm	millimeter
LC ₅₀	Lethal concentration (50% kill)	n.o.s.	not otherwise specified
LC ₅₀	Lowest published lethal concentration	ppb	part per billion
LD ₅₀	Lethal dose (50% kill)	ppm	part per million
LD ₅₀	Lowest published lethal dose	mppcf	millions of particles per cubic foot
MSHA	Mine Safety and Health Administration	μ	micron
NE	None established	μg	microgram
NFPA	National Fire Protection Association		
NIOSH	National Institute for Occupational Safety and Health		
NTP	National Toxicology Program		
OSHA	Occupational Safety and Health Administration		
PEL	Permissible Exposure Limit		
FIN	Product Identification Number		
RCRA	Resource Conservation and Recovery Act		
SARA	Superfund Amendments and Reauthorization Act		
STEL	Short Term Exposure Limit		
TCLP	Toxic Chemicals Leachate Program		
TDG	Transportation of Dangerous Goods		
IDL ₅₀	Lowest published toxic dose		
TLV	Threshold Limit Value		
TSCA	Toxic Substances Control Act		
TWA	Time Weighted Average		
WHMIS	Workplace Hazardous Material Information System (Canada)		

MATERIAL SAFETY DATA SHEET

Date: 08/01/97

Nos. 3297
3904, 3102

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME:	INSWOOL [®] BLANKET	INSWOOL [®] BULK
	INSWOOL [®] -HP BLANKET	INSWOOL [®] -HP BULK
	INSWOOL [®] -HP-M BLANKET*	INSWOOL [®] -HP-M BULK*
	INSWOOL [®] -HT BLANKET	INSWOOL [®] -HT BULK
	INSWOOL [®] -HT-M BLANKET*	INSWOOL [®] -HT-M BULK*
	INSWOOL [®] -LT BLANKET	INSWOOL [®] -LT BULK
	INSWOOL [®] -LT-M BLANKET*	INSWOOL [®] -LT-M BULK*
	INSWOOL [®] -M BLANKET	INSWOOL [®] -M BULK
	INSWOOL [®] MODULE BE-104	

PRODUCT TYPE: Refractory Ceramic Fiber Blanket or Bulk

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: Not Applicable

FORMULA: Not Applicable

*Manufactured in the Republic of Mexico.

SECTION II PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Refractory Ceramic Fiber ($\text{Al}_2\text{O}_3\text{-SiO}_2$) (100%)	1 fiber/cc*	142844-00-6

*A. P. Green workplace exposure guideline. See also Section III.

SECTION III HAZARDS INFORMATION

American Conference of Governmental Industrial Hygienists (ACGIH) is proposing a TLV-TWA of 0.1 to 0.5 fibers/cc for Refractory Ceramic Fiber.

International Agency for Research on Cancer (IARC) has classified Refractory Ceramic Fiber as 2B — possibly carcinogenic to humans.

As supplied, product contains no crystalline silica; however, when exposed to temperatures above 1800°F (982°C) during service, cristobalite, a form of crystalline silica, may form. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

Contact between refractory ceramic fibers and skin may result in transitory skin rash. Susceptibility varies with individuals, with some individuals showing no susceptibility.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

<u>EYES:</u>	ACUTE:	Causes mechanical irritation.
	CHRONIC:	None Known
<u>SKIN:</u>	ACUTE:	May cause skin irritation.
	CHRONIC:	None Known
<u>INHALATION:</u>	ACUTE:	Dust generated can cause breathing discomfort.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
<u>INGESTION:</u>	ACUTE:	Unknown
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: Non-Flammable

EXTINGUISHING MEDIA: Not applicable for product.

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: Dampen, then pick up or scoop up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place, away from extreme heat. Product is non-flammable, but packaging is combustible.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Use adequate ventilation to meet exposure controls (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator for mineral dusts when working with this product.

EYE PROTECTION: Use safety glasses with side shields to avoid eye contact.

SKIN PROTECTION: Wear impervious gloves and long-sleeved clothing to avoid skin contact. Cleanse exposed skin after any contact.

OTHER: Wash work clothing separately; rinse washing machine thoroughly after use.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	White to Off-White Fiber, in Blanket or Bulk Form		
BOILING POINT:	Not Applicable	pH:	7
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	Not Applicable	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed
Canadian DSL: All Components Listed
SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 07/14/95

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

JH:\MSDS\CURRENT\WB.087



CLEAN ACROSS AMERICA AND
THROUGHOUT THE WORLD™

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301

ASHGROVE CEMENT WEST INC (366)
13939 N RIVERGATE BLVD
PORTLAND, OR 97203

RECEIVED

AUG 08 1997

BY: _____

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

08/01/97

ISSUE DATE: 05/21/92
SUPERSEDES: 01/14/92

ZEP BLAST AWAY

PRODUCT NO.: 0379

Steam Cleaning Compound - Liquid

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(770) 439-4200

NON-OFFICE HOURS, WEEKENDS

(770) 432-2873

AND HOLIDAYS, PLEASE CALL YOUR

(770) 424-4789

LOCAL POISON CONTROL

(770) 392-1480

(770) 455-8160

(770) 552-8836

TRANSPORTATION EMERGENCY:

(770) 922-0923

CHEMTREC:

1-800-424-9300

TOLL-FREE - ALL CALLS RECORDED

DISTRICT OF COLUMBIA:

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

* NONYLPHENOXYPOLY(ETHYLENEOXY)ETHANOL ** npe; poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy;

CAS# 9016-45-9; RTECS# MD0905000; OSHA PEL/N/D

* TETRASODIUM ETHYLENEDIAMINE TETRAACETATE ** ethylenedinitrilo tetraacetic acid, tetrasodium salt; EDTA;

CAS# 64-02-8; RTECS# AH5075000; OSHA PEL N/D

TLV
(PPM)

EFFECTS
(SEE REVERSE)

% IN
PROD.

N/D

EIR

<5

N/D

IRR

5-10

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Chronic Effects of Overexposure:

Repeated or prolonged skin contact may produce chronic inflammation or dermatitis, characterized by redness, scaling, or itching. Repeated eye exposure may produce chronic inflammation of the eye or corneal damage. None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

*d PEL/TLV: Not established

Primary Routes of Entry: N/A

HAZ Codes: HEALTH 1; FLAM. 0; REACT. 0; PERS. PROTECT. B; CHRONIC HAZ. NO

FIRST AID PROCEDURES:

Skin: Flush contaminated skin with plenty of water. Consult a physician if irritation develops.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once.

Inhale: Move exposed person to fresh air. If irritation persists, get medical attention promptly.

Ingest: If this product is swallowed, do not induce vomiting. If victim is conscious give plenty of water to drink. Get medical attention at once.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing:

Wear neoprene, nitrile, or natural rubber gloves or gloves with proven resistance to the ingredients listed.

Eye Protection:

Wear tight-fitting splash-proof safety glasses especially if contact lenses are worn.

Respiratory Protection:

No special measures are required.

Ventilation:

No special measures are required.

SECTION V - PHYSICAL DATA

Boiling Point (°F):

215

Specific Gravity:

1.06

Vapor Pressure (mmHg):

N/D

Percent Volatile by Volume (%):

88

Vapor Density (air = 1):

N/D

Evaporation Rate (WATER = 1):

1.0

Solubility In Water:

COMPLETE

pH (concentrate):

13.0

pH (use dilution of 1%):

11.3

Appearance and Odor: CLEAR, RED LIQUID WITH MILD DETERGENT ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used): N/A ()

Flammable Limits:

LEL N/A UEL N/A

Extinguishing Media:

Noncombustible.

Special Fire Fighting:

Wear self-contained positive pres. breathing apparatus.

Unusual Fire Hazards:

None

SECTION VII - REACTIVITY DATA

Stability: Stable
Incompatibility (avoid): Strong oxidizing agents.
Polymerization: Will not occur.
Hazardous Decomposition: Carbon dioxide, carbon monoxide, & oxides of nitrogen

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety precautions in sections 4 & 9 during clean-up. Absorb spill on an inert absorbent material (e.g. Zep-O-Zorb); pick up and place in a clean D.O. . . specification container for disposal. Wash area thoroughly with a detergent solution and then rinse well with water.

Waste Disposal Method:

Liquids cannot be sent to landfills unless solidified. Unusable product and some collected, spent use-dilutions may require disposal as a hazardous waste at a permitted treatment/storage/disposal facility. In most states hazardous wastes in total amounts of 220 lbs. Or less per month may be disposed of in a chemical or industrial waste landfill. If company effluent is ultimately treated by a publicly owned treatment works, neutralization of spent tank-solutions with subsequent discharge to the sewer may be possible. Consult local, state and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: D002

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps. between 40-120 degrees F. Keep product away from skin and eyes. Do not breathe spray mists or vapors. Clothing or shoes which become contaminated with substance should be removed promptly and not worn until thoroughly cleaned. Keep out of the reach of children.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME Small sizes one gallon or less may be shipped as ORM-D: NONE

DOT Hazard Class: N/A

DOT I.D. Number: N/A

DOT Label/Placard: NONE

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container): NONE

NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS USED IN THE MSDS:**BY SECTION ALPHABETICALLY:****SECTION II: HAZARDOUS INGREDIENTS**

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.

CAS #: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).

DESIGNATIONS: Chemical and common names of hazardous ingredients.

EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling limits).

ACGIH: American Conference of Governmental Industrial Hygienists.

CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit. A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure limits.

(S) SKIN: Skin contact with substance can contribute to overall exposure.

STEL: Short Term Exposure Limit. Maximum concentration

for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX: Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this product.

N/D: Not Determined - Insufficient information for a determination for this item.

RTECS#: Registry of Toxic Effects of Chemical Substances - an unrevised listing of published toxicology data on chemical substances.

SARA: Superfund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated exposure.

TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.

EST'D PEL/TLV: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of vapors.

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: It refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)

PERCENT VOLATILE: The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure.

SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition or fire.

INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing excess pressure and heat.

STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act

RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.

TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)

MATERIAL SAFETY DATA SHEET 3901

Date: 08/11/97

No. 3901

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: GREENCAST®-45-L
GREENCAST®-45-L Plus

PRODUCT TYPE: Castable Refractory

Canadian WHMIS Classification: D,2

NEPA Rating: 1-0-0

CHEMICAL FAMILY: SiO₂ = 36-42% Al₂O₃ = 44-50% **FORMULA:** Not Applicable
CaO = 9-12% Fe₂O₃ = 1-2%

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (5-20%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (< 2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Fume Silica (SiO ₂) (< 5%)	2 mg/m ³ * Respirable Dust	69012-64-2
Refractory Cement (25-35%)	None (See Section IV)	12005-57-1

*Source: American Conference of Governmental Industrial Hygienists, 1996.

SECTION III

HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV
FIRST AID MEASURES

EFFECT OF OVEREXPOSURE:

EYES: ACUTE: Dust can cause mechanical irritation. Product's cement can cause eye irritation.
CHRONIC: None Known

SKIN: ACUTE: Product's cement can cause skin irritation.
CHRONIC: None Known

INHALATION: ACUTE: Dust generated can cause breathing discomfort or irritation.
CHRONIC: Long-term exposure to dust may cause lung damage.

INGESTION: ACUTE: Unknown
CHRONIC: Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V
FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray, Granular Mixture		
BOILING POINT:	Not Applicable	pH:	9-11
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	2.0	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 02/20/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

JH:\MSDS\CURRENT\GC45L.087

BDH INC.
M A T E R I A L S A F E T Y D A T A S H E E T-----
SECTION I CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER:

BDH INC.
350 EVANS AVENUE
TORONTO, ONTARIO
CANADA, M8Z 1K5INFORMATION PHONE NO.: 416-255-8521
HOURS: MON. TO FRI. (0830 - 1630)
CHEMTREC TRANSPORTATION EMERGENCY CENTER
(CHEMTREC) 24-HOUR...1-800-424-9300

PRODUCT NAME: BUFFER, PH 7.00, YELLOW

CATALOGUE NUMBER(S): 34170-130, 34170-148, 34170-157, 34170-175, B-2055-03, B-2055-04, B-2055-06, B-2055-08, 34170-158, 34170-196

CHEMICAL NAME/OTHER NAME: BUFFER, PH 7.00, YELLOW

CHEMICAL FORMULA: H2O, C12H9O, KH2PO4, NA2HPO4, C16H9N4NA3O9S2

CHEMICAL FAMILY: MIXTURE
-----SECTION II COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NO.	OSHA PEL	ACGIH TLV	%(W/V)
DOWICIDE A	132-27-4	-	-	0.05
POTASSIUM DIHYDROGEN PHOSPHATE	7778-77-0	-	-	0.35
DI-SODIUM HYDROGEN PHOSPHATE	7558-79-4	-	-	0.58
RTRAZINE	1934-21-0	-	-	0.0006
WATER	7732-18-5	-	-	

-----SECTION III HAZARDS IDENTIFICATION

APPEARANCE: CLEAR, YELLOW LIQUID

***** EMERGENCY OVERVIEW *****

* HANDLE IN ACCORDANCE WITH GOOD LABORATORY/ *

* INDUSTRIAL HYGIENE AND SAFETY PRACTICES *

POTENTIAL HEALTH EFFECTS (ACUTE & CHRONIC)

(REFER TO LAST PAGE FOR DISCLAIMER)

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SYMPTOMS OF EXPOSURE: NO INFORMATION AVAILABLE
MEDICAL CONDITION AGGRAVATED BY EXPOSURE: NONE IDENTIFIED
ROUTES OF ENTRY: INHALATION, INGESTION
CARCINOGENICITY: DOWICIDE A IS LISTED AS A POSSIBLE CARCINOGEN BY IARC

SECTION IV FIRST AID MEASURES

15 EYE: IN CASE OF EYE CONTACT, FLUSH WITH PLENTY OF WATER FOR AT LEAST
MINUTES WHILE HOLDING THE EYELIDS OPEN. HAVE EYES EXAMINED BY
MEDICAL PERSONNEL.

SKIN: IN CASE OF SKIN CONTACT, WASH WITH SOAP AND WATER. GET MEDICAL
ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.

INGESTION: IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE VICTIM A GLASS OF
WATER OR MILK. CALL A PHYSICIAN IMMEDIATELY. NEVER GIVE ANYTHING
BY MOUTH TO AN UNCONSCIOUS PERSON.

INHALATION: IF INHALED, REMOVE TO FRESH AIR.

SECTION V FIRE FIGHTING MEASURES

FLAMMABILITY CLASSIFICATION: NONCOMBUSTIBLE
EXTINGUISHING MEDIA: USE ANY SUITABLE FOR ADJACENT MATERIAL
FLASH POINT(F)/METHOD: NOT APPLICABLE
FIRE & EXPLOSION HAZARD: NONE IDENTIFIED
UPPER FLAMMABLE LIMIT (%): NOT APPLICABLE
LOWER FLAMMABLE LIMIT (%): NOT APPLICABLE
AUTOIGNITION TEMPERATURE: NOT APPLICABLE
FIREFIGHTING PROCEDURES: FIREFIGHTERS SHOULD WEAR A SELF CONTAINED BREATHING
APPARATUS.
HAZARDOUS COMBUSTION PRODUCTS: COX
SENSITIVITY TO STATIC DISCHARGE: NO
SENSITIVITY TO MECHANICAL IMPACT: NO

SECTION VI ACCIDENTAL RELEASE MEASURES

LEAK OR SPILL CLEANUP: EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR
SUITABLE PROTECTIVE EQUIPMENT LISTED IN EXPOSURE CONTROLS/PERSONAL PROTECTION.
CONTAIN THE RELEASE AND ELIMINATE IT'S SOURCE, IF THIS CAN BE DONE WITHOUT
RISK. TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DIS
POSAL.COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES.

REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY
DATA.

(REFER TO LAST PAGE FOR DISCLAIMER)

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SECTION VII HANDLING & STORAGE

HANDLING & STORAGE: STORE IN A COOL, DRY AREA.

SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: NONE SPECIFIED

PERSONAL PROTECTIVE EQUIPMENT

GLOVES: NEOPRENE, PVC OR EQUIVALENT
RESPIRATORY PROTECTION: NONE SPECIFIED
EYE PROTECTION: SAFETY GLASSES
CLOTHING: NONE SPECIFIED

SECTION IX PHYSICAL & CHEMICAL PROPERTIES

PHYSICAL STATE: LIQUID
APPEARANCE: CLEAR, YELLOW LIQUID
ODOR: ODORLESS
ODOR THRESHOLD: NOT APPLICABLE
VAPOR PRESSURE: NOT AVAILABLE
VAPOR DENSITY: NOT AVAILABLE
SPECIFIC GRAVITY: APPROX. 1
BOILING POINT (F): APPROX. 212
MELTING POINT (F): APPROX 320
EVAPORATION RATE: NOT AVAILABLE
PH: 7.00
SOLUBILITY IN WATER: SOLUBLE
OCTANOL/WATER PARTITION COEFFICIENT: NOT AVAILABLE
PER CENT VOLATILE BY VOL (%): 99
MOLECULAR WEIGHT: THIS PRODUCT IS A MIXTURE

SECTION X STABILITY & REACTIVITY

CHEMICAL STABILITY: NORMALLY STABLE
CONDITIONS TO AVOID: HEAT
MATERIALS TO AVOID: OXIDIZERS
HAZARDOUS POLYMERIZATION: DOES NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS: NONE

SECTION XI TOXICOLOGICAL INFORMATION

(REFER TO LAST PAGE FOR DISCLAIMER)

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-
EFFECTS OF ACUTE EXPOSURE: NO INFORMATION AVAILABLE
EFFECTS OF CHRONIC EXPOSURE: NO INFORMATION AVAILABLE
LD50: 656 MG/KG (ORAL-RAT) -DOWICIDE A-
LD50: NOT AVAILABLE
IRRITANCY (DRAIZE TEST RESULTS): NO INFORMATION AVAILABLE
CARCINOGENICITY: DOWICIDE A IS LISTED AS A POSSIBLE CARCINOGEN
TERATOGENICITY: NO INFORMATION AVAILABLE
MUTAGENICITY: NO INFORMATION AVAILABLE
REPRODUCTIVE EFFECTS: NO INFORMATION AVAILABLE
SENSITIZATION TO PRODUCT: NO INFORMATION AVAILABLE
TARGET ORGANS: NONE IDENTIFIED

-

-
SECTION XII DISPOSAL CONSIDERATIONS

-

EPA WASTE NUMBER(S): THIS MATERIAL DOES NOT HAVE AN EPA WASTE NUMBER.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL
CURRENT LOCAL, STATE AND FEDERAL REGULATIONS

-

-
SECTION XIII TRANSPORT INFORMATION

-

DOT SHIPPING NAME: NOT REGULATED
DOT NUMBER (UN): NOT REGULATED
PACKING GROUP: NOT REGULATED
HAZARD CLASS: NOT REGULATED

-

-
SECTION XIV REGULATORY INFORMATION

-

TSCA INVENTORY (YES/NO): YES, THIS MATERIAL IS A MIXTURE. THE CAS NUMBERS OF
ALL COMPONENTS ARE LISTED ON THE TSCA INVENTORY.

-

COMPONENT	SARA EHS (302)	SARA EHS TPQ (LBS)	CERCLA RQ (LBS)
WATER	-	-	-
DOWICIDE A	-	-	-
POTASSIUM DIHYDROGEN PHOSPHATE	-	-	-
DI-SODIUM HYDROGEN PHOSPHATE	-	-	-
TARTRAZINE	-	-	-

-

COMPONENT	OSHA FLOOR LIST	SARA 313	DEMINIMIS (SARA 313) (%)
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(REFER TO LAST PAGE FOR DISCLAIMER)

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-	-	-	-
WATER	-	-	-
DOWICIDE A	-	-	-
POTASSIUM DI-HYDROGEN PHOSPHATE	-	-	-
DI-SODIUM HYDROGEN PHOSPHATE	-	-	-
TRIAZINE	-	-	-

SECTION XV OTHER INFORMATION

NFPA HAZARD RATINGS (0-4)

HEALTH: 0
0

FLAMMABILITY: 0

REACTIVITY:

NFPA SPECIAL WARNINGS: NONE

PREPARATION DATE: AUGUST 24, 1993

REVISION HISTORY: AUGUST 24, 1993; APRIL 5, 1994; MAY 5, 1994; JULY 8, 1994

COMMENTS: NONE

PREPARED BY: TECHNICAL AFFAIRS DEPARTMENT, BDH INC.,
TORONTO, ONTARIO, CANADA
(416) 255-8521

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT BDH INC BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILLS AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED OF MERCHANTABILITY, FITNESS OR OTHERWISE.

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"ISSUED BY VWR 09-11-97"

VWR SCIENTIFIC PRODUCTS
1310 GOSHEN PARKWAY
WEST CHESTER, PA 19380
TELEPHONE: (610)431-1700

000000000

ATTN HOWARD MATHESON
ASH GROVE CEMENT

13939 N RIVERGATE BLVD
PORTLAND OR 97203
09-11-97

DEAR CUSTOMER:

ENCLOSED ARE THE MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR THE PRODUCT(S) THAT YOUR COMPANY RECENTLY PURCHASED FROM VWR SCIENTIFIC PRODUCTS. PLEASE FORWARD THESE MSDS(S) TO YOUR SAFETY OFFICER OR OTHER INDIVIDUAL IN YOUR ORGANIZATION RESPONSIBLE FOR IMPLEMENTING THESE REGULATIONS.

"ALL DATA OR INFORMATION REGARDING THE PARTICULAR PRODUCT YOU HAVE PURCHASED FROM VWR SCIENTIFIC PRODUCTS, WHICH IS PROVIDED IN THE ENCLOSED MATERIAL SAFETY DATA SHEET, IS OFFERED GRATUITOUSLY AND IN GOOD FAITH AS ACCURATE, BUT IS FURNISHED WITHOUT GUARANTY. VWR SCIENTIFIC PRODUCTS MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, YOU SHOULD PERFORM YOUR OWN INVESTIGATION AND INDEPENDENT VERIFICATION. THE CONDITIONS OF THE USE OF THE PRODUCT, AND THE SUITABILITY OF THE PRODUCT FOR YOUR PARTICULAR PURPOSES, ARE BEYOND THE CONTROL OF VWR SCIENTIFIC PRODUCTS. THUS, ALL RISKS OF THE USE OF THE PRODUCT ARE THEREFORE ASSUMED BY YOU, THE USER, EXCEPT AS TO SUCH WARRANTIES AS MAY BE PUBLISHED BY VWR SCIENTIFIC PRODUCTS, WITH RESPECT TO A PARTICULAR PRODUCT. VWR SCIENTIFIC PRODUCTS EXPRESSLY DISCLAIMS ALL WARRANTIES OF EVERY KIND, AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. VWR SCIENTIFIC PRODUCTS SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATEVER NATURE, DIRECTLY OR INDIRECTLY, RESULTING FROM USE OF THE PRODUCT, OR FROM THE PUBLICATION OF USE OF OR RELIANCE UPON DATA CONTAINED IN THE ENCLOSED MSDS. NOTHING IN THE MSDS IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS, OR WHICH EXTEND LICENSES UNDER VALID PATENTS. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO PASS ON TO YOUR CUSTOMER THE INFORMATION CONTAINED IN THE MSDS, AND GIVE TO THEM APPROPRIATE WARNINGS AND SAFE HANDLING INSTRUCTIONS AS NECESSARY TO MAKE THE PRODUCT SAFE FOR THE INTENDED USES BY YOUR CUSTOMER.

THANK YOU,

VWR SCIENTIFIC PRODUCTS

PAGE 001

09-11-97

CATALOG
NUMBER

MSDS
FORM-DOC
NUMBER

34170-133

34170-133

BDH INC.
M A T E R I A L S A F E T Y D A T A S H E E T

SECTION I CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER:

BDH INC.
350 EVANS AVENUE
TORONTO, ONTARIO
CANADA, M8Z 1K5

INFORMATION PHONE NO.: 416-255-8521
HOURS: MON. TO FRI. (0830 - 1630)
CHEMTREC TRANSPORTATION EMERGENCY CENTER
(CHEMTREC) 24-HOUR...1-800-424-9300

PRODUCT NAME: BUFFER PH 10.00, BLUE

CATALOGUE NUMBER(S): 34170-133, 34170-151, 34170-160, 34170-178, B-2105-03, B-2105-04, B-2105-06, B-2105-08, 34170-161, 34170-198

CHEMICAL NAME/OTHER NAME: BUFFER PH 10.00, BLUE

CHEMICAL FORMULA: H2O, NA2CO3, C37H35N2O6S2NA, NAHCO3, C6H12N4+(CH2CHCHCL)CL-

CHEMICAL FAMILY: MIXTURE

SECTION II COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NO.	OSHA PEL	ACGIH TLV	%(W/V)
WATER	7732-18-5	-	-	
SODIUM CARBONATE	497-19-8	-	-	0.26
SODIUM BICARBONATE	144-55-8	-	-	0.21
PATENT BLUE A	3486-30-4	-	-	0.
001				
WICIL 75				0.05

WICIL 75 IS COMPOSED OF THREE SUBSTANCES:

				%(W/W)
1-(3-CHLOROALLYL)-3,5	4080-31-3	-	-	0.0365
,7-TRIAZA-1-AZONIA-				
ADAMANTANE				
SODIUM BICARBONATE	144-55-8	-	-	0.0125
HEXAMETHYLENETETRA-	58713-21-6	-	-	0.0002
MINE HYDROCHLORIDE				

SECTION III HAZARDS IDENTIFICATION

APPEARANCE: CLEAR, BLUE LIQUID; ODORLESS

***** EMERGENCY OVERVIEW *****

* HANDLE IN ACCORDANCE WITH GOOD LABORATORY/

*

(REFER TO LAST PAGE FOR DISCLAIMER)

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* INDUSTRIAL HYGIENE AND SAFETY PRACTICES *

POTENTIAL HEALTH EFFECTS (ACUTE & CHRONIC)

SYMPTOMS OF EXPOSURE: NO INFORMATION AVAILABLE
MEDICAL CONDITION AGGRAVATED BY EXPOSURE: NONE IDENTIFIED
ROUTES OF ENTRY: INHALATION, INGESTION
CARCINOGENICITY: NOT LISTED AS A CARCINOGEN

SECTION IV FIRST AID MEASURES

15 EYE: IN CASE OF EYE CONTACT, FLUSH WITH PLENTY OF WATER FOR AT LEAST
MINUTES WHILE HOLDING THE EYELIDS OPEN. HAVE EYES EXAMINED BY
MEDICAL PERSONNEL.

SKIN: IN CASE OF SKIN CONTACT, WASH WITH SOAP AND WATER. GET MEDICAL
ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.

INGESTION: IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE VICTIM A GLASS OF
WATER OR MILK. CALL A PHYSICIAN IMMEDIATELY. NEVER GIVE ANYTHING
BY MOUTH TO AN UNCONSCIOUS PERSON.

INHALATION: IF INHALED, REMOVE TO FRESH AIR.

SECTION V FIRE FIGHTING MEASURES

FLAMMABILITY CLASSIFICATION: NONCOMBUSTIBLE
EXTINGUISHING MEDIA: USE AN EXTINGUISHER APPROPRIATE TO THE SURROUNDING
MATERIAL THAT IS BURNING.
FLASH POINT(F)/METHOD: NOT APPLICABLE
FIRE & EXPLOSION HAZARD: NONE IDENTIFIED
UPPER FLAMMABLE LIMIT (%): NOT APPLICABLE
LOWER FLAMMABLE LIMIT (%): NOT APPLICABLE
AUTOIGNITION TEMPERATURE: NOT APPLICABLE
FIREFIGHTING PROCEDURES: FIREFIGHTERS SHOULD WEAR A SELF CONTAINED BREATHING
APPARATUS.
HAZARDOUS COMBUSTION PRODUCTS: SOX, NOX, COX
SENSITIVITY TO STATIC DISCHARGE: NO
SENSITIVITY TO MECHANICAL IMPACT: NO

SECTION VI ACCIDENTAL RELEASE MEASURES

LEAK OR SPILL CLEANUP: EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR

(REFER TO LAST PAGE FOR DISCLAIMER)

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SUITABLE PROTECTIVE EQUIPMENT LISTED IN EXPOSURE CONTROLS/PERSONAL PROTECTION. CONTAIN THE RELEASE AND ELIMINATE IT'S SOURCE, IF THIS CAN BE DONE WITHOUT RISK. TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DISPOSAL. COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY DATA.

SECTION VII HANDLING & STORAGE

HANDLING & STORAGE: STORE IN A COOL, DRY , WELL VENTILATED AREA.

SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: ENGINEERING AND/OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

PERSONAL PROTECTIVE EQUIPMENT

GLOVES: NONE SPECIFIED
RESPIRATORY PROTECTION: NONE SPECIFIED
EYE PROTECTION: SAFETY GLASSES
CLOTHING: NO SPECIAL REQUIREMENTS

SECTION IX PHYSICAL & CHEMICAL PROPERTIES

PHYSICAL STATE: LIQUID
APPEARANCE: CLEAR, BLUE LIQUID
ODOR: ODORLESS
ODOR THRESHOLD: NOT APPLICABLE
VAPOR PRESSURE: NOT AVAILABLE
VAPOR DENSITY: NOT AVAILABLE
SPECIFIC GRAVITY: APPROX. 1
BOILING POINT (F): APPROX. 212
MELTING POINT (F): APPROX. 32
EVAPORATION RATE: NOT AVAILABLE
PH: 10.0
SOLUBILITY IN WATER: SOLUBLE
OCTANOL/WATER PARTITION COEFFICIENT: NOT AVAILABLE
PER CENT VOLATILE BY VOL (%): 100
MOLECULAR WEIGHT: THIS IS A MIXTURE

SECTION X STABILITY & REACTIVITY

CHEMICAL STABILITY: NORMALLY STABLE

(REFER TO LAST PAGE FOR DISCLAIMER)

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CONDITIONS TO AVOID: NONE IDENTIFIED
MATERIALS TO AVOID: NONE
HAZARDOUS POLYMERIZATION: DOES NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS: SOX

SECTION XI TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE: NO INFORMATION AVAILABLE
EFFECTS OF CHRONIC EXPOSURE: NO INFORMATION AVAILABLE
LD50: NOT AVAILABLE
LC50: NOT AVAILABLE
IRRITANCY (DRAIZE TEST RESULTS): NO INFORMATION AVAILABLE
CARCINOGENICITY: NOT LISTED AS A CARCINOGEN
TERATOGENICITY: NO INFORMATION AVAILABLE
MUTAGENICITY: NO INFORMATION AVAILABLE
REPRODUCTIVE EFFECTS: NO INFORMATION AVAILABLE
SENSITIZATION TO PRODUCT: NO INFORMATION AVAILABLE
TARGET ORGANS: NONE IDENTIFIED

SECTION XII DISPOSAL CONSIDERATIONS

EPA WASTE NUMBER(S): MATERIAL DOES NOT HAVE AN EPA WASTE NUMBER AND IS NOT A LISTED WASTE, HOWEVER CONSULTATION WITH A PERMITTED WASTE DISPOSAL SITE (TSD) SHOULD BE ACCOMPLISHED.
ALWAYS CONTACT A PERMITTED WASTE DIPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS

SECTION XIII TRANSPORT INFORMATION

DOT SHIPPING NAME: NOT REGULATED
DOT NUMBER (UN): NOT REGULATED
PACKING GROUP: NOT REGULATED
HAZARD CLASS: NOT REGULATED

SECTION XIV REGULATORY INFORMATION

TSCA INVENTORY (YES/NO): YES, THIS MATERIAL IS A MIXTURE. THE CAS NUMBERS OF ALL COMPONENTS ARE LISTED ON THE TSCA INVENTORY.

COMPONENT	SARA EHS (302)	SARA EHS TPQ (LBS)	CERCLA RQ (LBS)
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SODIUM CARBONATE	-	-	-
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(REFER TO LAST PAGE FOR DISCLAIMER)

34170-133 PAGE: 4

SODIUM BICARBONATE -
PATENT BLUE A -
WATER -

COMPONENT OSHA FLOOR LIST SARA 313 DEMINIMIS (SARA 313)(%)

SODIUM CARBONATE -
SODIUM BICARBONATE -
PATENT BLUE A -
WATER -

SECTION XV OTHER INFORMATION

NFPA HAZARD RATINGS (0-4)

HEALTH: 0

FLAMMABILITY: 0

REACTIVITY: 0

NFPA SPECIAL WARNINGS: NONE

PREPARATION DATE: AUGUST 24, 1993

REVISION HISTORY: AUGUST 24, 1993; APRIL 5, 1994; MAY 5, 1994;
JUNE 10, 1994; JULY 8, 1994; JULY 22, 1996

COMMENTS: NONE

PREPARED BY: TECHNICAL AFFAIRS DEPARTMENT, BDH INC.,
TORONTO, ONTARIO, CANADA
(416) 255-8521

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT BDH INC BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILLS AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED OF MERCHANTABILITY, FITNESS OR OTHERWISE.

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34170-130

34170-133 PAGE: 5
"ISSUED BY VWR 09-11-97"

34170-130

MATERIAL SAFETY DATA SHEET

Date: 09/15/97

No. 3912, 4990, 1286
7153, 6915, 3913, 1650, 3915
3916, 3917, 7147, 3918, 3919

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME:

BRICK MIX 1002
CENTURION
CLIPPER[®]
CLIPPER[®] AH
CLIPPER[®] DP
CLIPPER[®] HB
CLIPPER[®] S
CLIPPER[®] SM
CLIPPER[®] "900"

HIAC[®] K
HIAC[®] K CB BF
KX-99[®]
KX-99[®] BF
KX-99[®] BF AH
MEX-KO
MEX-KO "900"

PRAIRIE
R-2009
SDS MULTIHOLE CHECKER
SUPER DUTY (was Grefco Prod)
SUPER DUTY (Refractory Anchor)
YUKON

PRODUCT TYPE: Super Duty Refractory Bricks or Shapes

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO₂ = 48-54% Al₂O₃ = 42-48%
Fe₂O₃ = 1-2% NaKO = 0.5-1%
FORMULA: Not Applicable

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite** (SiO ₂) (10-20%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz** (SiO ₂) (0-3%)	0.1 mg/m ³ * Respirable Dust	14808-60-7

*Source: American Conference of Governmental Industrial Hygienists, 1996.

**Not mechanically separate from each other or other mineralogical phases in product as supplied.

SECTION III

HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

EYES: ACUTE: Dust or chips can cause mechanical irritation.
CHRONIC: None Known

SKIN: ACUTE: Can cause cuts or abrasions.
CHRONIC: None Known

INHALATION: ACUTE: Dust, if present, may cause upper respiratory irritation.
CHRONIC: Long-term exposure to dust may cause lung damage.

INGESTION: ACUTE: Unknown
CHRONIC: Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: For broken shapes or fragments, sweep, shovel up, or pick up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place, away from extreme heat. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Impervious gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bricks or shapes.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Off-White to Brown Solid		
BOILING POINT:	Not Applicable	pH:	7
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	2.6-2.7	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed
Canadian DSL: All Components Listed
SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 07/28/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

JH:\MSDS\CURRENT\BM1002.097

RECEIVED

SEP 22 1997

POLYGEM, INC.

BY: 1105 CAROLINA DRIVE, WEST CHICAGO, IL 60185 TEL: (630) 231-5600 FAX: (630) 231-5604

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910, 1200

Date of Preparation: 7/1/97 HEALTH - 1 FLAMMABILITY - 1 REACTIVITY - 1 OTHER - NONE

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC #500 (white, clear, black, aluminum)**PRODUCT APPEARANCE:** Paste like, various colors, Acidic Acid odor.**CHEMICAL NAME:** Acetoxysilane**DOT HAZARD CLASSIFICATION:** NONE**EMERGENCY TELEPHONE NUMBERS:**

1-800-535-5053 --- INFOTRAC

1-630-231-5600 --- POLYGEM, INC.

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

<u>INGREDIENT</u>	<u>CAS #</u>	<u>PEL/TLV-TWA</u>	<u>STEL-TWA</u>
Acetoxysilane	T/S	N/E	N/E

N/E - Not Established

T/S - Trade Secret

S - Skin

Listed above are the hazardous component(s) as defined in 40 CFR 172 and 28 CFR 1010 which are present in this product and all components which appear on the hazardous substance list of any state.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represents approximate or typical values. They do not constitute product specifications.

BOILING RANGE: >300 F**MELTING POINT:** n/a**DENSITY:** 1.05**PERCENT VOLATILE:** LESS THAN 5%**VAPOR DENSITY (AIR=1):** NOT VOLATILE**VAPOR PRESSURE (mm Hg):** LESS THAN 5MM**EVAPORATION RATE:** LESS THAN 1**WATER MISCIBILITY:** LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: >250F**LOWER FLAMMABILITY LIMIT:**

N/A

TEST METHOD: SETAFLASH CLOSED CUP**UPPER FLAMMABLE LIMIT:** N/A**RECOMMENDED EXTINGUISHING MEDIA:** FOAM, CARBON DIOXIDE

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF-CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS. REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

MAY PRODUCE HAZARDOUS FUMES OR HAZARDOUS DECOMPOSITION PRODUCTS.

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE**HAZARDOUS POLYMERIZATION:** WILL NOT OCCUR.**INCOMPATIBILITY:** Strong oxidizers, epoxy resin, and amine mixture especially when hot.**HAZARDOUS DECOMPOSITION PRODUCTS:** Carbon Monoxide, Carbon Dioxide and Phenolics.**CONDITIONS TO AVOID:** High heat, amines, strong oxidizers, acids and bases.

SECTION 6 - HEALTH HAZARD DATA**EFFECTS OF OVEREXPOSURE:**

INHALATION: May cause nasal irritation, central nervous system depression, or lung injury.

EYE CONTACT: Mild or moderate irritation, possible minor temporary cornea injury.

SKIN CONTACT: May cause skin irritation on prolonged or repeated exposure.

SKIN ABSORPTION: Not considered toxic.

PERMISSIBLE EXPOSURE LEVEL: none assigned.

CHRONIC EFFECTS OF OVEREXPOSURE: None

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce vomiting. Seek medical attention. May cause burns to mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation. Ingestion. Skin and Eye contact.

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:**

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container.

Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA HOTLINE (1-800-424-9346).

SECTION 8 - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION:**

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

SECTION 9 - SPECIAL PRECAUTIONS**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:**

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light.

Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately.

Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION

REGULATORY INFORMATION: N/A

SARA HAZARD CLASSIFICATION: SARA Title III Regulations (40 CFR 370): N/A

SARA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

DOT PROPER SHIPPING NAME:

SILICONE

UN NUMBER: N/A

This information is furnished without warranty, representation inducement or license of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from sources believed by Polygem, Inc., to be accurate, and Polygem, Inc. does not assure any legal responsibility for use reliance upon the same. Customer are encouraged to conduct their own tests. Before using any product, read its label.

National Sanitary Supply Co.
P.O. Box 61126
Los Angeles, Ca 90061
(213) 770-1970

10/13/97
2813 TOTOCHY, TALAL

193150
Deputy Office

ASH GROVE CEMENT WEST, INC.
13939 N RIVERGATE BLVD
PORTLAND OR 97203-6608

Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal OSHA Hazard Communication Final Standard 29 CFR 1910. 1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnesses in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias
Executive Administration

NATIONAL SANITARY SUPPLY CO.
13217 S. Figueroa Street
Los Angeles, California 90061

Manufacturer:
SANI-FRESH INTERNATIONAL, INC.
4702 Goldfield Drive
San Antonio, TX 78218
MEDICAL EMERGENCY 1-800-228-5635 EXT. 140
CHEM-TEL 1-800-255-3924
INFORMATION 1-210-661-5374

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: WATERLESS SANI-FRESH CLEANSER

Date Issued: 12/01/92

Product Code: 91215

Supercedes: 06/21/91

National Item#: 1128XX

SECTION 2. INGREDIENTS

	OSHA PEL	ACGIH TLV	EXPOSURE LIMITS	%	CAS #
D-LIMONENE (DIPENTENE)	NE	NE	NE	5-25	5989-27-5
MINERAL OIL (AS MIST)	5mg/m3	5mg/m3	NE	5-15	8042-47-5
TRIETHANOLAMINE	NE	NE	NE	< 5	102-71-6
C11-C12 ISOPARAFFIN	NE	NE	300ppm	5-25	64742-48-9
OLEIC ACID	NE	NE	NE	< 5	112-80-1
POLYETHYLENE*	NE	NE	NE	0-5	9002-88-4

UNIDENTIFIED INGREDIENTS ARE NOT CONSIDERED HAZARDOUS UNDER THE FEDERAL
HAZARD COMMUNICATION STANDARD (29 CFR-1910.1200).

* AS MIST

* WATERLESS WITH GRIT CONTAINS POLYETHYLENE AND WATERLESS DOES NOT
CONTAIN POLYETHYLENE.

SECTION 3. PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point (F): NE	Specific Gravity (H2O=1): 0.882
Vapor Pressure (mm Hg.): NE	PH: 7.5 to 8.5
Vapor Density (Air=1): NE	Reactivity in Water: NONE
Solubility in Water: APPRECIABLE	Melting Point: N/A
Evaporation Rate (BuAc=1): <1	
Appearance and Odor: WHITE CREAMY LOTION WITH CITRUS ODOR.	

Section 4. FIRE AND EXPLOSION DATA

Flash Point: 145F Method Used: PENSKE-MARTENS CLOSED CUP ASTM D-93
Flammable Limits In Air % By Volume: LEL=NE UEL=NE
Auto-Ignition Temperature: NE
Extinguishing Media: FOAM, DRY CHEMICAL OR CARBON DIOXIDE.
Special Fire Fighting Procedures: USE SUPPLIED-AIR BREATHING EQUIPMENT
FOR ENCLOSED OR CONFINED SPACES OR AS OTHERWISE NEEDED.
Unusual Fire & Explosion Hazards: NONE KNOWN TO SANI-FRESH

Product Name: WATERLESS SANI-FRESH CLEANSER

National Item#: 1128

Date Issued: 12/01/92

SECTION 5. PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: STABLE Conditions to Avoid: NORMALLY STABLE. AVOID HEAT, OPEN FLAMES.

Incompatibility - Materials to Avoid: STRONG OXIDIZERS (SUCH AS LIQUID CHLORINE AND SODIUM HYPOCHLORITE).

Hazardous Polymerization: WILL NOT OCCUR

Hazardous Decomposition Products: FUMES, SMOKE CARBON MONOXIDE AND OTHER DECOMPOSITION PRODUCTS IN CASE OF INCOMPLETE COMBUSTION

SECTION 6. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions To Be Taken In Handling And Storage:

RECOMMEND STORAGE BETWEEN 40F AND 100F

Other Precautions: NONE

Steps To Be Taken In Case Material Is Released Or Spilled:

REMOVE HEAT AND IGNITION SOURCES; VENTILATE THE AREA; CLEAN UP WITH ABSORBENT.

Waste Disposal Methods (Consult Federal, State & Local Regulations):

FLUSH WASTE TO SEWER WITH LARGE AMOUNTS OF WATER, IF PERMITTED BY LOCAL, STATE AND FEDERAL REGULATIONS.

Note: THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS OF REPORTABLE QUANTITIES ON THE CURRENT COMMUNITY RIGHT-TO-KNOW SECTION 313, TITLE III LIST.

SECTION 7. HEALTH HAZARDS

Acute: EYE IRRITATION, UPSET STOMACH

Chronic: NE

Signs & Symptoms of Exposure: REDNESS AND ITCHING OF EYES

Medical Conditions Generally Aggravated By Exposure: NE

Chemical Listed as Carcinogen or Potential Carcinogen:

National Toxicology Program: NO

I. A. R. C. Monographs: NO

OSHA: NO

Emergency First Aid:

Eyes: IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING THE EYE LIDS OPEN. GET PROMPT MEDICAL ATTENTION.

Ingestion: CONTACT LOCAL POISON CONTROL CENTER OR PHYSICIAN IMMEDIATELY.

Routes Of Entry:

Inhalation: HIGHLY UNUSUAL

Eyes: MAY OCCUR

Skin: MAY OCCUR BUT UNLIKELY

Ingestion: MAY OCCUR

Product Name: WATERLESS SANI-FRESH CLEANSER

National Item#: 1128

Date Issued: 12/01/92

SECTION 8. SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection: NOT NORMALLY REQUIRED

Ventilation: NOT GENERALLY NEEDED

Local Exhaust: ADEQUATE

Mechanical: ADEQUATE

Special: N/A

Other: N/A

Protective Gloves: NOT NORMALLY NEEDED

Eye Protection: IF POTENTIAL FOR EYE CONTACT EXISTS, WEAR CHEMICAL GOGGLES.

Other Protective- Clothing or Equipment: NONE NORMALLY REQUIRED.

Work/Hygienic Practices: CLEAN-UP ALL SPILLS IMMEDIATELY. PRACTICE GOOD PERSONAL HYGIENE

Hazardous Materials Identification System Rating (HMIS)

HEALTH -1 FIRE -2 REACTIVITY -0

PERSONAL PROTECTION -A (SAFETY GLASSES)

NOTES: THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT SHOULD BE MADE BY THE MATERIAL USER BASED ON THE PARTICULAR PLANT CONDITIONS WHERE THE MATERIAL IS TO BE USED TOGETHER WITH INFORMATION CONTAINED IN THE PRODUCT M. S. D. S.

THIS MATERIAL SAFETY DATA SHEET PERTAINS TO ALL SANI-FRESH AND SANI-TUFF WATERLESS AND WATERLESS WITH GRIT CLEANSERS.

NE MEANS NOT ESTABLISHED

N/A MEANS NOT AVAILABLE

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

MATERIAL SAFETY DATA SHEET 846

Date: 10/17/97

No. 846

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: GREENKLEEN-60
GREENKLEEN-60 Plus

PRODUCT TYPE: Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO_2 = 30-35% Al_2O_3 = 58-62% **FORMULA:** Not Applicable
 CaO = 2-4% Fe_2O_3 = 1%

SECTION II PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO_2) (< 2%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO_2) (< 2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Amorphous Silica (SiO_2) (4-6%)	2 mg/m ³ * Respirable Dust	69012-64-2
Alumina (Al_2O_3) (8-12%)	10 mg/m ³ * Total Dust	1344-28-1
Refractory Cement (8-9%)	None (See Section IV)	12005-57-1

*Source: American Conference of Governmental Industrial Hygienists, 1996.

SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV
FIRST AID MEASURES

EFFECT OF OVEREXPOSURE:

EYES:	ACUTE:	Dust can cause mechanical irritation. Product's cement can cause eye irritation.
	CHRONIC:	None Known
SKIN:	ACUTE:	Product's cement can cause skin irritation.
	CHRONIC:	None Known
INHALATION:	ACUTE:	Dust generated can cause breathing discomfort or irritation.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
INGESTION:	ACUTE:	Unknown
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V
FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

<u>APPEARANCE:</u>	Gray to Tan, Granular Mixture		
<u>BOILING POINT:</u>	Not Applicable	<u>pH:</u>	8-9
<u>SOLUBILITY IN WATER:</u>	Slight	<u>ODOR:</u>	None
<u>SPECIFIC GRAVITY:</u>	2.8	<u>MELTING POINT:</u>	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

Material Safety Data Sheet
Product: GREENKLEEN-60, etc.

10/17/97

4

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed
Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 08/11/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

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MATERIAL SAFETY DATA SHEET

846

Date: 10/17/97

No. 846

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: GREENKLEEN-60
GREENKLEEN-60 Plus

PRODUCT TYPE: Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO_2 = 30-35% Al_2O_3 = 58-62% **FORMULA:** Not Applicable
 CaO = 2-4% Fe_2O_3 = 1%

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL	TLV-TWA	CAS #
Cristobalite (SiO_2) ($<2\%$)	0.05 mg/m^3 Respirable Dust	14464-46-1
Quartz (SiO_2) ($<2\%$)	0.3 mg/m^3 Respirable Dust	14808-60-7
Amorphous Silica (SiO_2) (4-6%)	2 mg/m^3 Respirable Dust	69012-64-2
Alumina (Al_2O_3) (8-12%)	10 mg/m^3 Total Dust	1344-28-1
Refractory Cement (8-9%)	None (See Section IV)	12005-57-1

*Source: American Conference of Governmental Industrial Hygienists, 1996.

SECTION III

HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 66.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV
FIRST AID MEASURES

EFFECT OF OVEREXPOSURE:

<u>EYES:</u>	ACUTE:	Dust can cause mechanical irritation. Product's cement can cause eye irritation.
	CHRONIC:	None Known
<u>SKIN:</u>	ACUTE:	Product's cement can cause skin irritation.
	CHRONIC:	None Known
<u>INHALATION:</u>	ACUTE:	Dust generated can cause breathing discomfort or irritation.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
<u>INGESTION:</u>	ACUTE:	Unknown
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V
FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray to Tan, Granular Mixture		
BOILING POINT:	Not Applicable	pH:	8-9
SOLUBILITY IN WATER:	Slight	ODOR:	None
SPECIFIC GRAVITY:	2.8	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 08/11/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

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MATERIAL SAFETY DATA SHEET

Date: 12/12/97

Nos. 1905, 5120, 5111

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: SUPER HYBOND® GREENGUN-45
SUPER HYBOND® Plus GREENGUN-45 Plus
SUPER HYBOND® GR SUPER BOND
SUPER HYBOND® GR Plus SUPER BOND Plus
SUPER HYBOND® J
SUPER HYBOND® J Plus
SUPER HYBOND® S
SUPER HYBOND® S Plus

PRODUCT TYPE: Plastic Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO₂ = 48-51% Al₂O₃ = 43-46% **FORMULA:** Not Applicable
Fe₂O₃ = 1-2% TiO₂ = 1-3%
NaKO = 1%

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (3-12%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (1-4%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Aluminum Sulfate (<5%)	2 mg/m ³ *	10043-01-3
Glass Cullet (Powdered Glass) (<5%)	(None)	(None)

*Source: American Conference of Governmental Industrial Hygienists, 1997.

SECTION III

HAZARDS INFORMATION

Since product contains aluminum sulfate, SO_x fumes may be given off during burn-in.

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

<u>EYES:</u>	ACUTE:	Dust can cause mechanical irritation. Product's cement can cause eye irritation.
	CHRONIC:	None Known
<u>SKIN:</u>	ACUTE:	Product's cement can cause skin irritation.
	CHRONIC:	None Known
<u>INHALATION:</u>	ACUTE:	Dust generated can cause breathing discomfort or irritation.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
<u>INGESTION:</u>	ACUTE:	Unknown
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: The aluminum sulfate present, if heated to decomposition, will emit toxic fumes of SO₂.

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped containers of product.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

<u>APPEARANCE:</u>	Gray, Granular Mixture		
<u>BOILING POINT:</u>	Not Applicable	<u>pH:</u>	3-5
<u>SOLUBILITY IN WATER:</u>	None	<u>ODOR:</u>	None
<u>SPECIFIC GRAVITY:</u>	2.6	<u>MELTING POINT:</u>	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 11/07/96

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

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Material Safety Data Sheet for Calcium Hydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium hydroxide, calcium dihydroxide, $\text{Ca}(\text{OH})_2$, slaked lime, hydrated lime, lime, milk of lime, carboxide, caustic lime

Trade Name and Synonyms: Snowflake, Kemilime, Slik
CAS No. 001-305-620

Date Reviewed: March, 1998

Section II - Hazardous Ingredients and Exposure Limits

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 ACGIH TLV</u>
Calcium Hydroxide [$\text{Ca}(\text{OH})_2$]	1305-62-0	>1%	15 mg/m^3 total dust 5 mg/m^3 respirable dust	5 mg/m^3

Section III - Physical/Chemical Characteristics

Chemical Family: Inorganic Base

Molecular Weight: 74.10

Boiling Point: Decomposes to calcium oxide above 580°C

Melting Point: ($-\text{H}_2\text{O}$) at 580°C ; converts to calcium oxide

Vapor Pressure (mm Hg): Not Applicable

Specific Gravity: 2.24

Vapor Density: (Air=1) 0

Solubility in Water: 0.185 g/100 ml at 0°C
0.077 g/100 ml at 100°C

Evaporation Rate: Not Applicable

Appearance and Odor: Soft white powder; odorless

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): Not Applicable; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: Not Applicable; **UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25 °C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough is common.
- c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.

2. **Skin contact:** corrosive

- a. **Acute exposure:** Lime in contact with unprotected skin can produce severe burns. Because of the solubility of lime, further penetration is possible and it may continue for several days. The extent of damage depends on duration of contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

3. **Eye contact:** corrosive

- a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
- b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
- c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.

Section V - Health Hazard Data - (Continued)

4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Calcium hydroxide listed as an OSHA carcinogen: NO By NTP: NO By IARC: NO

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.49, with water at temperatures of 25°C or above.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: Not Applicable

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: Wear a NIOSH approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium hydroxide

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Steps to be taken in case material is Released or Spilled: Pick up spilled powder. Avoid contact and dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet for Lawn Lime

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Lawn Lime

Chemical Family: Primarily a mixture of calcium carbonate and calcium hydroxide and many contain a minor amount of calcium oxide.

Revision Date: March, 1998

Section II - Hazardous Ingredients and Exposure Limits

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Calcium carbonate, CaCO_3	1317-65-3	Total dust, 15 mg/m^3 Respirable fraction, 5 mg/m^3 **	10 mg/m^3 *
Calcium hydroxide, $\text{Ca}(\text{OH})_2$	1305-62-0	5 mg/m^3	5 mg/m^3
Calcium oxide, CaO	1305-78-8	5 mg/m^3	2 mg/m^3
*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica			
**Unless contains >1% crystalline silica (quartz)			

Lawn Lime can contain quartz >0.1%. The OSHA PEL for quartz is $\frac{10\text{mg}/\text{m}^3}{\% \text{SiO}_2 + 2}$ respirable dust only.

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m^3 .

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base
Specific Gravity:	Approximate range 2.3 to 2.60
Vapor Pressure(mm Hg):	0
Vapor Density:	(Air=1) Not Applicable
Evaporation Rate:	Not Applicable
Solubility in Water:	0.0014% (25 °C)
Appearance and Odor:	Soft white powder or granules; faint odor
Melting Point:	Calcium hydroxide-decomposes above 600 °C Calcium carbonate-decomposes above 900 °C

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Lawn Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Lawn Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Lawn Lime can contain quartz crystalline silica greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough is common. Chronic overexposure may result in silicosis.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact:** corrosive
 - a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Lawn Lime listed as an OSHA Carcinogenic: NO **By NTP:** NO **By IARC:** NO

Quartz listed as an OSHA carcinogen: NO **By NTP:** YES (Group 2A) **By IARC:** YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder, avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: Use a NIOSH approved (42 CFR 84) respirator with dust filtering capability for protection against airborne lawn lime.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances. Class I and II.



Material Safety Data Sheet For Portland Cement

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

Emergency Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Portland Cement (CAS #65997-15-1)

Trade Name and Synonyms: Type I, IA, II, III, V

Revision Date: March, 1998

Chemical Family: Calcium Salts

Formula: Portland cement consists of finely ground portland cement clinker mixed with a small amount of calcium sulfate (gypsum) to control set. No specific formula applies to portland cement.

Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in portland cement:

$3\text{CaO} \cdot \text{SiO}_2$	(CAS # 12168-85-3)
$2\text{CaO} \cdot \text{SiO}_2$	(CAS # 10034-77-2)
$3\text{CaO} \cdot \text{Al}_2\text{O}_3$	(CAS # 12042-78-3)
$4\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{Fe}_2\text{O}_3$	(CAS # 12068-35-8)
$\text{CaSO}_4 \cdot \text{XH}_2\text{O}$	(CAS # 13397-24-5)

Small amounts of CaO , MgO , K_2SO_4 , Na_2SO_4 may also be present.

Hazardous Components(s):

Substance	CAS Number	OSHA PEL	ACGIH TLV-TWA	MSHA Exposure Limits
Portland Cement - total dust	65997-15-1	15 mg/m^3	10 mg/m^3 (1986) *	10 mg/m^3
Portland Cement - respirable dust	65997-15-1	5 mg/m^3	3 mg/m^3 (1995) *	Not Applicable
Quartz	14808-60-7	10 mg/m^3 (% silica + 2)	0.1 mg/m^3 (1986) (respirable fraction)	10 mg/m^3 (% silica + 2)

Note: Some cements may contain small amounts of crystalline silica (slightly more than 0.1%). * Applicable if <1% crystalline silica is present.

Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable.

Solubility in Water: Slight (0.1-1.0%)

Specific Gravity: (H₂O=1) 2.9 - 3.1

Evaporation Rate: Not applicable.

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

Section IV - Fire and Explosion Hazard Data

Flash Point: Portland cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

Section V - Health Hazard Data

Acute Effects: Wet cement on unprotected skin can cause severe caustic burns. **NOTE: Cement burns skin with little warning.** Dry cement can produce mild irritation to severe burns of the eye; it can irritate the upper respiratory system.

Chronic Effects: Dry cement can cause inflammation of the lining of the nose and the cornea. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium @ < 0.05%). Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Section V - Health Hazard Data - Continued

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement and/or failure.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings; seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

Section VII-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Cement is highly alkaline and will react with acids to produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VII - Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

Section VIII - Special Protection Information

Respiratory Protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet for Masonry Cement

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Masonry Cement

Trade Name and Synonyms: Masonry Cement, Masonry Cement Type N,
Masonry Cement Type S

Revision Date: March, 1998

Chemical Family: Calcium Salts

Description: Masonry cement consists of portland cement, a finely ground portland cement clinker mixed with a small amount of gypsum to control set, calcium carbonate (i.e. limestone), and minor quantities (generally <1 percent) of chemical and/or mineral admixtures. Masonry cement may also contain quartz sand.

Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in masonry cement:

3CaO.SiO ₂	(CAS # 12168-85-3)
2CaO.SiO ₂	(CAS # 10034-77-2)
3CaO.Al ₂ O ₃	(CAS # 12042-78-3)
4CaO.Al ₂ O ₃ .Fe ₂ O ₃	(CAS # 12068-35-8)
CaSO ₄ .XH ₂ O	(CAS # 13397-24-5)
Calcium Carbonate	(CAS # 1317-65-3)

Small amounts of CaO, MgO, K₂SO₄, Na₂SO₄ may also be present.

Section II - Hazardous Ingredients - Continued

Hazardous Components:

Quartz Sand (silica)

OSHA PEL: 10 mg/m³ /% SiO₂ - 2 (for respirable fraction)

ACGIH TLV (1994-95): 0.1 mg/m³

Portland Cement

OSHA PEL: 10 mg/m³ total dust*
5 mg/m³ respirable fraction

ACGIH TLV (1994-95): 10 mg/m³ total dust*

*Only if less than 1% quartz and no asbestos is present. See PEL TLV for quartz, above.

Calcium Carbonate

OSHA PEL: 15 mg/m³ total dust*
5 mg/m³ respirable fraction

ACGIH TLV (1994-95): 10 mg/m³ total dust*

*Only if quartz is not present. See PEL/TLV for quartz above.

Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable. masonry cement is a powdered solid.

Solubility in Water: Slight (0.1-1.0%)

Specific Gravity: (H₂O=1) 2.8 - 3.0

Evaporation Rate: Not applicable

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

Section IV-Fire and Explosion Hazard Data

Flash Point: Masonry cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

Section V-Health Hazard Data

Acute Effects: Wet cement on unprotected skin can cause severe caustic burns. **NOTE: Cement burns skin with little warning.** Dry cement can produce mild irritation to severe burns of the eye: it can irritate the upper respiratory system.

Chronic Effects: Dry cement can cause inflammation of the lining of the nose and the cornea. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium @ < 0.05%). Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement and/or failure.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings; seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

Section VI-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Contact with acids will produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VII-Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

Section VIII - Special Protection Information

Respiratory Protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet for Cement Kiln Dust

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Cement Kiln Dust; CKD

Chemical Name and Synonyms: A mixture of sulfates, chlorides, carbonates, and oxides of sodium, potassium and calcium; quartz (CAS No. 01-4808-60-7), limestone (CAS No. 1317-65-3), fly ash, dolomite, feldspars, and iron oxides; glasses of silicon dioxide, aluminum oxide and iron oxide; and cement compounds (CAS No. 65997-15-1). Cement kiln dust (CKD) is a partially calcined mineral mixture created by electrostatic precipitators (ESPs) or by other air pollution control devices (APCDs), and deposited in ESP collection bins.

When waste-derived fuels comprise a part of the fuel source, CKD may contain 200-2000 ppm lead and traces of other heavy metals, including, but not limited to, arsenic, chromium, cadmium, antimony, barium, beryllium, silver, mercury, thallium, selenium and nickel.

Calcium oxide may also be present in freshly generated CKD. If CKD is mixed with water, the calcium oxide will hydrate to form calcium hydroxide.

Revision Date: March, 1998

Section II - Hazardous Ingredients

	OSHA PEL	1994-1995 ACGIH TLV	Carcinogen Status
Inert or Nuisance Dust Respirable Fraction Total Dust	5 mg/m ³ 15 mg/m ³	3 mg/m ³ 10 mg/m ³	Not Applicable
Calcium oxide, Quicklime, CaO	5 mg/m ³	2 mg/m ³	Not Applicable
Hydrated Lime, Ca(OH) ₂ :Total: Respirable:	15 mg/m ³ 5 mg/m ³	5 mg/m ³ (Total)	Not Applicable
Respirable Quartz, Free Silica, SiO ₂	$\frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$	0.1 mg/m ³	NTP - Yes IARC - Yes OSHA - No
Total Quartz, Free Silica, SiO ₂	$\frac{30 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$	Not Applicable	NTP - Yes IARC - Yes OSHA - No

CKD contains greater than 0.1% crystalline silica.

Section II - Hazardous Ingredients (Continued)

Metals - Representative Exposure Limits			
	OSHA PEL	1995-1996 ACGIH - TLV	Carcinogen Status
Arsenic	0.01 mg/m ³	0.01 mg/m ³	OSHA - Yes IARC - Yes NTP - Yes
Chromium	1.0 mg/m ³	0.50 mg/m ³	OSHA - No IARC - Yes NTP - Yes
Cadmium	0.005 mg/m ³	0.01 mg/m ³	OSHA - Yes IARC - Yes NTP - Yes
Lead	0.05 mg/m ³	0.05 mg/m ³	OSHA - No IARC - Yes NTP - No
Antimony	0.50 mg/m ³	0.50 mg/m ³	OSHA - No IARC - No NTP - No
Barium	0.50 mg/m ³	0.50 mg/m ³	OSHA - No IARC - No NTP - No
Beryllium	2 µg/m ³	2 µg/m ³	OSHA - No IARC - Yes NTP - Yes
Silver	0.01 mg/m ³	0.01 mg/m ³	OSHA - No IARC - No NTP - No
Mercury	C* = 0.1 mg/m ³	0.025 mg/m ³ SKIN **	OSHA - No IARC - Yes NTP - No
Thallium	0.1 mg/m ³	0.1 mg/m ³ , SKIN**	OSHA - No IARC - No NTP - No
Selenium	0.20 mg/m ³	0.20 mg/m ³	OSHA - No IARC - Yes NTP - Yes
Nickel	1 mg/m ³	0.1 mg/m ³	OSHA - No IARC - Yes NTP - Yes

*C = Ceiling

** SKIN = can be absorbed through skin

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base with mixed inorganic oxides and salts
Specific Gravity:	2.82
Vapor Pressure(mm Hg):	N/A
Vapor Density:	(Air=1) N/A
Evaporation Rate:	NA
Solubility in Water:	1.0 to 12%
Appearance and Odor:	Buff colored powder; odorless
Melting Point:	N/A

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): N/A: Cement Kiln Dust is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: N/A

Special Fire Fighting Procedures: Cement Kiln Dust is incombustible

Firefighting Media: N/A

CAUTION: Saturated water solutions of cement kiln dust can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Route(s) of Entry of cement kiln dust: Inhalation; skin; eyes; ingestion

1. Inhalation:

- a. **Acute exposure:** Freshly generated CKD may be corrosive to damp moist skin if calcium oxide and calcium hydroxide are present. Inhalation of this dust may cause sore throat, coughing, choking, and dyspnea.
- b. **Chronic exposure:** Bronchial irritation with chronic cough may occur. CKD can contain crystalline silica in the respirable size range of particulate. Chronic long term exposure to respirable crystalline silica without the use of a respirator can cause silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. NTP and IARC list respirable crystalline silica as a carcinogen; OSHA and ACGIH do not.

2. Skin contact:

- a. **Acute exposure:** Freshly generated CKD may be corrosive in contact with unprotected skin, due to the content of calcium oxide and calcium hydroxide (lime). Solutions of lime can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.

Section V - Health Hazard Data - (Continued)

- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of CKD remains (approximately 15-20 minutes). In the case of chemical burns, due to the lime content of CKD, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact:** Freshly generated CKD may be corrosive to moist tissue around the eyes
 - a. **Acute exposure:** Direct contact with the freshly generated solid or aqueous solutions may cause conjunctival edema and/or corneal damage; can lead to and cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of CKD remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately. Do not induce vomiting.

Hazard Information About Trace Metals in CKD:

Arsenic – Routes of entry: inhalation, absorption, skin and/or eye contact, ingestion. Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuritis, respiratory system irritation; hyperpigmentation of skin. Target organs are liver, kidneys, skin, lungs and lymphatic system. Arsenic is associated with lung and lymphatic cancer.

Chromium – Routes of entry: inhalation, ingestion, skin and/or eye contact. Chromium compounds are associated with eye irritation, allergic contact dermatitis and in some cases lung fibrosis. Target organs are the eyes, skin, and respiratory system.

Cadmium – Routes of entry: inhalation and ingestion. Cadmium dust may cause pulmonary edema and shortness of breath. Can result in cough, chest tightness, substernal pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, loss of the sense of smell, emphysema, proteinuria and mild anemia. The target organs are the respiratory system, kidneys, prostate and blood. Cadmium is associated with prostatic and lung cancer.

Lead – Routes of entry: inhalation, ingestion, skin and/or eye contact. Lead is associated with weakness, fatigue, insomnia, facial pallor, anorexia, low weight, constipation, abdominal pain, anemia, lead line on gums, tremors, wrist paralysis, brain alterations, kidney disease, eye irritation and hypotension. The target organs are the GI tract, CNS, kidneys, blood and gingival tissue.

Antimony – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes irritation of eyes, skin, nose, throat and mouth; dizziness; headache; nausea; vomiting; diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly. The target organs are the eyes, skin, respiratory system and CVS.

Barium – Routes of entry: inhalation, ingestion. Barium compounds can cause severe eye burns and skin irritation. It can cause muscle stimulation followed by paralysis with symptoms including nausea, vomiting, colic and diarrhea. Target organs are the skin, eyes and muscle system.

Beryllium – Routes of entry: inhalation and skin and/or eye contact. Chronic exposure causes berylliosis: anorexia, low weight, weakness, chest pain, cough, clubbing of fingers, cyanosis, and pulmonary insufficiency; also causes eye irritation and dermatitis. The target organs are the eyes, respiratory system, and skin. Beryllium is associated with lung cancer.

Silver – Routes of entry: inhalation, ingestion, skin and/or eye contact. Can cause blue-gray discoloration of skin, eyes and mucous membranes; may cause irritation and ulceration of skin and GI tract disturbances. Target organs are nasal septum, skin and eyes.

Mercury – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes skin and eye irritation; cough, chest pain, shortness of breath, bronchial pneumonitis; tremors, insomnia, irritability, indecision, headache, fatigue, weakness, inflammation of the mouth, salivation, GI tract disturbances, anorexia, weight loss and protein in the urine.

Thallium – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes nausea and vomiting, diarrhea and abdominal pain; eyelid drooping, loss of binocular vision, peripheral neuritis, tremors; retrosternal tightness, chest pain, pulmonary edema; seizures, involuntary body movements, psychosis; liver and kidney damage; hair loss, tingling in the legs. Target organs are eyes, respiratory system, CNS, liver, kidneys, GI tract, body hair.

Selenium – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes eye, skin, nose and throat irritation; visual disturbances; headache; chills, fever; shortness of breath, bronchitis; metallic taste, garlic breath, GI tract disturbances; dermatitis; eye and skin burns. In animals causes: anemia; liver necrosis and cirrhosis; kidney and spleen damage. Target organs are the eyes, skin, respiratory system, liver, kidneys, blood, spleen.

Nickel – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes allergic dermatitis, allergic asthma, pneumonitis. Target organs are nasal cavities, lungs, skin. Nickel is associated with lung and nasal cancer.

Section VI - Reactivity Data

Stability: Calcium oxide and calcium hydroxide, if present in CKD, will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate. Cement kiln dust consolidates when mixed with water. The resulting dry material sets loosely, preventing the material from becoming airborne. With excess water, calcium oxide and calcium hydroxide which may be present in freshly generated CKD can form a corrosive solution, pH 12-12.5.

Incompatibility (Materials to avoid): Contact with mineral acids will cause evolution of carbon dioxide with production of heat.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Handling, conveying, or releasing CKD as a dry dusty solid. Wetting CKD prior to all handling will prevent the substance from becoming airborne.

Section VII - Precautions for Safe Handling and Use

Handling: Use protective equipment as described in Section VIII.

Storing: CKD should be wet by water spray when discharging from ESP bins to avoid generation of dust when conveying and depositing in landfill. No other precautions needed.

Section VIII - Control Measures

Respiratory Protection: A NIOSH approved respirator must be used to control exposure below PELs and TLVs. Respirator must be effective in preventing exposure to respirable particulate composed of crystalline silica, lime and heavy metals at trace concentrations.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with cement kiln dust, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet for Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
 8900 Indian Creek Parkway
 P. O. Box 25900
 Overland Park, KS 66225
 Emergency Telephone Number: (913) 451-8900
 Information Telephone Number: (913) 451-8900
 Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime, unslaked lime
 Trade Name and Synonyms: Pebble Quicklime, Cal-Max
 CAS No.: 1305-78-8
 Date Revised: March, 1998

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Quicklime, CaO	1305-78-8	5 mg/m ³	2 mg/m ³
Quartz, crystalline silica	14808-60-7	$PEL = \frac{10mg/m^3}{\% SiO_2^{*+2}}$	0.1*

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists
 OSHA Occupational Safety and Health Administration
 PEL Permissible Exposure Limit
 TLV Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family: Inorganic Base Evaporation Rate: Not Applicable
Molecular Weight: 56.10
Boiling Point: 5162°C
Melting Point: 4737°F
Specific Gravity: 3.2-3.4
Vapor Density: (Air=1) Not Applicable
Solubility in Water: 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C
Appearance and Odor: White granular or powder; faint earthy odor

Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable **LEL:** Not Applicable **UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. **Warning:** Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. **CAUTION:** Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. **Inhalation: corrosive**
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact: corrosive**
 - a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact: corrosive**
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion: corrosive.** If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO

Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25 °C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium oxide.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet
for
Calcium Hydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225
Emergency Telephone Number: (913) 451-8900
Information Telephone Number: (913) 451-8900
Chemical Name and Synonyms: Calcium hydroxide, calcium dihydroxide, $\text{Ca}(\text{OH})_2$, slaked lime, hydrated lime, lime, milk of lime, carboxide, caustic lime
Trade Name and Synonyms: Snowflake, Kemilime, Slik
CAS No. 001-305-620
Date Reviewed: March, 1998

Section II - Hazardous Ingredients and Exposure Limits

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 ACGIH TLV</u>
Calcium Hydroxide [$\text{Ca}(\text{OH})_2$]	1305-62-0	>1%	15 mg/m^3 total dust 5 mg/m^3 respirable dust	5 mg/m^3

Section III - Physical/Chemical Characteristics

Chemical Family: Inorganic Base
Molecular Weight: 74.10
Boiling Point: Decomposes to calcium oxide above 580°C
Melting Point: ($-\text{H}_2\text{O}$) at 580°C ; converts to calcium oxide
Vapor Pressure (mm Hg): Not Applicable
Specific Gravity: 2.24
Vapor Density: (Air=1) 0
Solubility in Water: 0.185 g/100 ml at 0°C
0.077 g/100 ml at 100°C
Evaporation Rate: Not Applicable
Appearance and Odor: Soft white powder; odorless

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): Not Applicable; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: Not Applicable; UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25 °C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Route(s) of Entry: Inhalation, skin, eyes, ingestion

1. **Inhalation: corrosive**
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough is common.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact: corrosive**
 - a. **Acute exposure:** Lime in contact with unprotected skin can produce severe burns. Because of the solubility of lime, further penetration is possible and it may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact: corrosive**
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.

Section V - Health Hazard Data - (Continued)

4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Calcium hydroxide listed as an OSHA carcinogen: NO By NTP: NO By IARC: NO

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.49, with water at temperatures of 25°C or above.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: Not Applicable

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: Wear a NIOSH approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium hydroxide

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Steps to be taken in case material is Released or Spilled: Pick up spilled powder. Avoid contact and dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt, long pants, can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet for Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime, unslaked lime

Trade Name and Synonyms: Pebble Quicklime, Cal-Max

CAS No.: 1305-78-8

Date Revised: March, 1998

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Quicklime, CaO	1305-78-8	5 mg/m ³	2 mg/m ³
Quartz, crystalline silica	14808-60-7	PEL = $\frac{10\text{mg/m}^3}{\% \text{SiO}_2^{*+2}}$	0.1*

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family:	Inorganic Base	Evaporation Rate: Not Applicable
Molecular Weight:	56.10	
Boiling Point:	5162°C	
Melting Point:	4737°F.	
Specific Gravity:	3.2-3.4	
Vapor Density:	(Air=1) Not Applicable	
Solubility in Water:	0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C	
Appearance and Odor:	White granular or powder; faint earthy odor	

Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable **LEL:** Not Applicable **UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. **Warning:** Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. **CAUTION:** Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact:** corrosive
 - a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO **By NTP:** NO **By IARC:** NO

Quartz listed as an OSHA Carcinogen: NO **By NTP:** YES (Group 2A) **By IARC:** YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25°C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium oxide.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with
any controlled ozone depleting substances, Class I and II.



**Material Safety Data Sheet
for
Calcium Oxide**

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime, unslaked lime

Trade Name and Synonyms: Pebble Quicklime, Cal-Max

CAS No.: 1305-78-8

Date Revised: March, 1998

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Quicklime, CaO	1305-78-8	5 mg/m ³	2 mg/m ³
Quartz, crystalline silica	14808-60-7	PEL = $\frac{10\text{mg/m}^3}{\% \text{SiO}_2^{*+2}}$	0.1*

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family: Inorganic Base **Evaporation Rate:** Not Applicable
Molecular Weight: 56.10
Boiling Point: 5162°C
Melting Point: 4737°F.
Specific Gravity: 3.2-3.4
Vapor Density: (Air=1) Not Applicable
Solubility in Water: 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C
Appearance and Odor: White granular or powder; faint earthy odor

Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable **LEL:** Not Applicable **UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. **Warning:** Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. **CAUTION:** Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact:** corrosive
 - a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO

Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25 °C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium oxide.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with
any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet for Calcium Carbonate

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Substance: Calcium Carbonate, Calcite, CaCO_3 , Ground Limestone, Ash Grove Grid Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: CaCO_3

Revision Date: April, 1998

Section II - Hazardous Ingredients and Exposure Limits

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 ACGIH TLV</u>
Calcium Carbonate (CaCO_3)	1317-65-3	>1%	15 mg/m^3 total dust 5 mg/m^3 respirable dust	10 mg/m^3 **
Silica (quartz)	14808-60-7	>0.1%	<u>10 mg/m^3</u> % Silica* + 2	0.1 mg/m^3 *

* Respirable fraction

** For total dust containing no asbestos and <1% crystalline silica: calcium carbonate may contain crystalline silica as an impurity.

Section III - Physical/Chemical Characteristics

Boiling Point: NA* **Specific Gravity:** 2.710

Vapor Pressure (mm Hg): 0 **Melting Point:** Decomposes 900°C

Vapor Density: (Air=1) NA **Evaporation Rate:** NA

Solubility in Water: 0.0014% (25°C)

Appearance and Odor: White powder or granules; no odor

*NA = Not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA

Flammable or Explosive Limits: NA **LEL:** NA **UEL:** NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900 °C (1652 °F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet for AB3 Limestone

Section I - Identity

Manufacturer's name and address: Shamrock Aggregates
23004 E. 24 Highway
Independence, MO 64050

Emergency Telephone Number: (816) 792-1628
Information Telephone Number: (816) 329-8993

Substance: AB3 Limestone, Calcium Carbonate, Calcite, CaCO_3 , Limestone, Lime Rock, Road Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: CaCO_3

Revision Date: April, 1998

Section II - Hazardous Ingredients

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 ACGIH TLV</u>
Calcium Carbonate (CaCO_3)	471-34-1	>1%	15 mg/m^3 total dust 5 mg/m^3 respirable dust	10 mg/m^3 **
Silica (quartz)	14808-60-7	>0.1%	$\frac{10 \text{ mg/m}^3}{\% \text{ Silica}^* + 2}$	0.1 mg/m^3 *

* Respirable fraction

** For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain silica as an impurity.

Section III - Physical/Chemical Characteristics

Boiling Point: NA*
Vapor Pressure(mmHg): 0
Vapor Density: (Air=1) NA
Solubility in Water: 0.0014% (25°C)
Appearance and Odor: White powder or granules; No odor

Specific Gravity: 2.710
Melting Point: Decomposes 900°C.
Evaporation Rate: 0 (1652°F)

*NA = not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA*

Flammable Limits: NA **LEL:** NA **UEL:** NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

*NA = Not Applicable

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Emergency measures not generally indicated.

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulate.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



**Material Safety Data Sheet
for
Calcium Carbonate**

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900
Information Telephone Number: (913) 451-8900

Substance: Calcium Carbonate, Calcite, CaCO_3 , Ground Limestone, Ash Grove Grid Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: CaCO_3

Revision Date: April, 1998

Section II - Hazardous Ingredients and Exposure Limits

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 ACGIH TLV</u>
Calcium Carbonate (CaCO_3)	1317-65-3	>1%	15 mg/m ³ total dust 5 mg/m ³ respirable dust	10 mg/m ³ **
Silica (quartz)	14808-60-7	>0.1%	$\frac{10 \text{ mg/m}^3}{\% \text{ Silica}^* + 2}$	0.1 mg/m ³ *

* Respirable fraction

** For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain crystalline silica as an impurity.

Section III - Physical/Chemical Characteristics

Boiling Point: NA* **Specific Gravity:** 2.710
Vapor Pressure (mm Hg): 0 **Melting Point:** Decomposes 900°C
Vapor Density: (Air=1) NA **Evaporation Rate:** NA
Solubility in Water: 0.0014% (25°C)
Appearance and Odor: White powder or granules; no odor

*NA = Not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA

Flammable or Explosive Limits: NA **LEL:** NA **UEL:** NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

MATERIAL SAFETY DATA SHEET

Date: 04/03/98

Nos. 1464, 3574,
5347, 5457

A. P. GREEN REFRACTORIES, INC.
and Subsidiaries
GREEN BOULEVARD, MEXICO, MO 65265

Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: KRUZITE®-70 BRICK MIX 1006
KRUZITE®-70 B R-8008
KRUZITE® D R-8008-M
KRUZITE® R

PRODUCT TYPE: Refractory Bricks or Shapes

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO_2 = 24-28% Al_2O_3 = 68-72% **FORMULA:** Not Applicable
 Fe_2O_3 = 1-2% NaKO = 0.2-0.4%

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite** (SiO_2) (7-11%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz** (SiO_2) (0-2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Corundum** (Al_2O_3) (10-15%)	10 mg/m ³ * Total Dust	1344-28-1

*Source: American Conference of Governmental Industrial Hygienists, 1997.

**Not mechanically separate from each other or other mineralogical phases in product as supplied.

SECTION III

HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

EYES: ACUTE: Dust or chips can cause mechanical irritation.
CHRONIC: None Known

SKIN: ACUTE: Can cause cuts or abrasions.
CHRONIC: None Known

INHALATION: ACUTE: Dust, if present, may cause upper respiratory irritation.
CHRONIC: Long-term exposure to dust may cause lung damage.

INGESTION: ACUTE: Unknown
CHRONIC: Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: For broken shapes or fragments, sweep, shovel up, or pick up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place, away from extreme heat. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Impervious gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bricks or shapes.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Buff Solid	pH:	Not Applicable
BOILING POINT:	Not Applicable	ODOR:	None
SOLUBILITY IN WATER:	None	MELTING POINT:	Not Applicable
SPECIFIC GRAVITY:	3.0-3.2		

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed
Canadian DSL: All Components Listed
SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 11/07/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Refractories, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Larry L. Lorensen
Quality Engineer
Phone: 573-473-3427

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4-9-98

MATERIAL SAFETY DATA SHEET

Date: 11/21/97

No. 5041, 1906, 8651
1807, 5274, 5552, 7325

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

<u>PRODUCT NAME:</u>	KS-4V	MC-25
	KS-4V Plus	MC-25 Plus
	KS-4V GR	CASTABLE MIX 247
	KS-4V GR Plus	CASTABLE MIX 247 Plus
	KS-4V AR	MEGACAST-24C
	KS-4V AR Plus	MEGACAST-24C Plus
	MC-22	GREEN 5C45
	MC-22 Plus	GREEN 5C45 Plus

PRODUCT TYPE: Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

<u>CHEMICAL FAMILY:</u>	SiO ₂ = 39-47%	Al ₂ O ₃ = 40-48%	<u>FORMULA:</u> Not Applicable
	CaO = 4-12%	Fe ₂ O ₃ = 1-5%	

SECTION II PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (5-20%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (< 2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Refractory Cement (15-30%)	None (See Section IV)	12005-57-1

*Source: American Conference of Governmental Industrial Hygienists, 1997.

SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

<u>EYES:</u>	ACUTE:	Dust can cause mechanical irritation. Product's cement can cause eye irritation.
	CHRONIC:	None Known
<u>SKIN:</u>	ACUTE:	Product's cement can cause skin irritation.
	CHRONIC:	None Known
<u>INHALATION:</u>	ACUTE:	Dust generated can cause breathing discomfort or irritation.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
<u>INGESTION:</u>	ACUTE:	Unknown
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray, Granular Mixture		
BOILING POINT:	Not Applicable	pH:	9-11
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	2.7-2.8	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 07/28/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

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4-9-98

MATERIAL SAFETY DATA SHEET 1065

Date: 12/31/97

Nos. 1065

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
 Transportation Emergencies — Contact CHEMTREC at 800-424-9300
 International Emergencies — Contact CHEMTREC at 703-527-3887
 Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: MIZZOU® CASTABLE MIZZOU® GR
 MIZZOU® CASTABLE Plus MIZZOU® GR Plus
 MIZZOU® CASTABLE Supra MIZZOU® GR Supra
 MIZZOU® CASTABLE Supra Plus MIZZOU® GR Supra Plus

PRODUCT TYPE: Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO₂ = 29-36% Al₂O₃ = 57-63% **FORMULA:** Not Applicable
 CaO = 2-4% Fe₂O₃ = 1-2%

SECTION II**PRODUCT HAZARDOUS INGREDIENTS**

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (5-15%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (< 2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Amorphous Silica (< 5%)	2 mg/m ³ * Respirable Dust	69012-64-2
Alumina (Al ₂ O ₃) (< 5%)**	10 mg/m ³ * Total Dust	1344-28-1
Refractory Cement (< 15%)	None (See Section V)	12005-57-1

*Source: American Conference of Governmental Industrial Hygienists, 1997.

**MIZZOU® GR and MIZZOU® GR Plus only.

SECTION III**HAZARDS INFORMATION**

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

<u>EYES:</u>	ACUTE:	Dust can cause mechanical irritation. Product's cement can cause eye injury.
	CHRONIC:	None Known
<u>SKIN:</u>	ACUTE:	Product's cement can cause skin irritation.
	CHRONIC:	None Known
<u>INHALATION:</u>	ACUTE:	Dust generated can cause breathing discomfort or irritation.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
<u>INGESTION:</u>	ACUTE:	Unknown
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray, Granular Mixture		
BOILING POINT:	Not Applicable	pH:	7-8
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	2.7	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - **HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 02/29/96

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

JH:\MSDS\CURRENT\MC.127



Material Safety Data Sheet for Calcium Carbonate

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
 8900 Indian Creek Parkway
 P. O. Box 25900
 Overland Park, KS 66225
 Emergency Telephone Number: (913) 451-8900
 Information Telephone Number: (913) 451-8900
 Substance: Calcium Carbonate, Calcite, CaCO_3 , Ground Limestone, Ash Grove Grid
 Athletic Field Marker, Mineral Filler, Lime Rock
 Chemical Family: Carbonate, weak inorganic base
 Molecular Formula: CaCO_3
 Revision Date: April, 1998

Section II - Hazardous Ingredients and Exposure Limits

	CAS #	%	OSHA PEL	1994-95 ACGIH TLV
Calcium Carbonate (CaCO_3)	1317-65-3	>1%	15 mg/m^3 total dust 5 mg/m^3 respirable dust	10 mg/m^3 **
Silica (quartz)	14808-60-7	>0.1%	10 mg/m^3 % Silica* + 2	0.1 mg/m^3 *

* Respirable fraction.

** For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain crystalline silica as an impurity.

Section III - Physical/Chemical Characteristics

Boiling Point: NA*
 Vapor Pressure (mm Hg): 0
 Vapor Density: (Air=1) NA
 Solubility in Water: 0.0014% (25 °C)
 Appearance and Odor: White powder or granules; no odor
 Specific Gravity: 2.710
 Melting Point: Decomposes 900 °C
 Evaporation Rate: NA

*NA = Not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA
Flammable or Explosive Limits: NA LEL: NA UEL: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA
Firefighting Media: NA
Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900 °C (1652 °F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



CLEAN ACROSS AMERICA AND
THROUGHOUT THE WORLD™

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301

MATERIAL SAFETY DATA SHEET AND SAFE HANDLING AND DISPOSAL INFORMATION

ISSUE DATE: 01/26/96

SUPERSEDES:

Date printed: 05/20/98

ZEP SPIRIT II

Product No: 0679 Cleaner - Disinfectant - Deodorant

SECTION I - EMERGENCY CONTACTS

TELEPHONE: (404) 352-1680 *BETWEEN 8:00 AM - 5:00 PM (EST)*
MEDICAL EMERGENCY: (770) 439-4200 *NON OFFICE HOURS, WEEKENDS*
(770) 432-2873 *AND HOLIDAYS, PLEASE CALL YOUR*
(770) 455-8160 *LOCAL POISON CONTROL*
(770) 552-8836
(770) 424-2048
(770) 424-4789
TRANSPORTATION EMERGENCY: (770) 922-0923
CHEMTREC: (800) 424-9300 *TOLL FREE - ALL CALLS RECORDED*
DISTRICT OF COLUMBIA: (202) 483-7616 *ALL CALLS RECORDED*

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS	(PPM)	EFFECTS (SEE NOTICE)	% IN PROD.
** TETRASODIUM ETHYLENEDIAMINE TETRAACETATE ** ethylenedinitrilo tetraacetic acid, tetrasodium salt; EDTA; CAS# 64-02-8; RTECS# AH5075000; OSHA PEL N/D	N/D	IRR	< 5

SECTION III - HEALTH HAZARD DATA

SPECIAL NOTE: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

ACUTE EFFECTS OF OVEREXPOSURE:

This product, particularly in its concentrated form, may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or blistering.

Overexposure by inhalation may cause respiratory irritation.

Exposure may aggravate existing skin disorders such as dermatitis.

CHRONIC EFFECTS OF OVEREXPOSURE:

Repeated or prolonged skin contact may produce chronic inflammation or dermatitis, characterized by redness, scaling or itching.

None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

EST'D PEL/TLV: Not established PRIMARY ROUTES OF ENTRY: Inh, Skin.

HMIS CODES: HEALTH 1; FLAM. 0; REACT. 0; PERS. PROTECT. B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN: Flush contaminated skin with plenty of water. Consult a physician if irritation develops.

EYES: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once.

INHALE: Move exposed person to fresh air. If irritation persists, get medical attention promptly.

INGEST: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING: Wear nitrile gloves or use gloves with demonstrated resistance to the ingredients in this product.

EYE PROTECTION: Wear tight-fitting splash-proof safety glasses especially if contact lenses are worn.

RESPIRATORY PROTECTION: No extra measures are needed if ventilation is adequate.

VENTILATION: Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

BOILING POINT (F):	~ 220	SPECIFIC GRAVITY:	1.01
VAPOR PRESSURE(mmHg):	N/A	EVAPORATION RATE (WATER = 1):	1.0
VAPOR DENSITY(AIR = 1):	N/A	pH(CONCENTRATE):	11.7-12.4
SOLUBILITY IN WATER:	COMPLETE	pH(USE DILUTION OF):	N/A
VOC CONTENT (CONCENTRATE):	0.0% 0.00 lb/gl		
APPEARANCE AND ODOR: A THIN, CLEAR GREEN LIQUID WITH A CITRUS FRAGRANCE.			

(Continued on Page: 2)

Product No: 0679 SECTION VI - FIRE AND EXPLOSION DATA

FLASH POINT(C) (METHOD USED): None (TCC)

FLAMMABLE LIMITS: LEL: N/A UEL: N/A

EXTINGUISHING MEDIA: Noncombustible.

SPECIAL FIRE FIGHTING: Fire exposed drums should be cooled with stream of water.

UNUSUAL FIRE HAZARDS: Wear self-contained positive pres. breathing apparatus.

SECTION VII - REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY(AVOID): Heat, sunlight, strong oxidizers, and acids.

POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer.

Thoroughly rinse spill area with water.

WASTE DISPOSAL METHOD:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg. Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA HAZ. WASTE NOS.: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

Store tightly closed container in a dry area at temps. between 40-120 degrees F.

Keep product away from skin and eyes.

Do not breathe spray mists or vapors.

Clothing or shoes which become contaminated with substance should be removed promptly and not reworn until thoroughly cleaned.

Keep out of the reach of children.

SECTION X - REGULATORY INFORMATION

DOT PROPER SHIPPING NAME: INDUSTRIAL CLEANERS N.O.I., LIQUID KEEP FROM FREEZING

NOTE: DOT information applies to larger package sizes of affected products. For some products, DOT may require alternate names and labeling in accordance with packaging group requirements.

DOT HAZARD CLASS: DOT PACKING GROUP:

DOT I.D. NUMBER: DOT LABEL/PLACARD:

EPA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

**** NOTICE ****

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS LISTED ALPHABETICALLY BY SECTION

SECTION II: HAZARDOUS INGREDIENTS

CAR; Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.

CAS #; Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.

CBL; Combustible - At temperatures between 100F and 200F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS; Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR; Corrosive - Causes irreversible injury to living tissue (e.g. burns).

DESIGNATIONS; Chemical and common names of hazardous ingredients.

EIR; Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS; The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLVs, and OSHA PELs (TWA, STEL and ceiling limits).

ACGIH; American Conference of Governmental Industrial Hygienists.

CEILING; The concentration that should not be exceeded in the workplace during any part of the working exposure.

OSHA; Occupational Safety and Health Administration

PEL; Permissible Exposure Limit - A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM; Parts per million - unit of measure for exposure limits.

(S) SKIN; Skin contact with substance can contribute to overall exposure.

STEL; Short Term Exposure Limit - Maximum concentration for a continuous 15-minute exposure period.

TLV; Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL; Flammable - At temperatures under 100F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS; Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX; Highly toxic - the probable lethal dose for a 70kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR; Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A; Not Applicable - Category is not appropriate for this product.

N/D; Not Determined - Insufficient information for a determination for this item.

RTECS#; Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.

SARA; Superfund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN; Sensitizer - Causes allergic reaction after repeated exposure.

TOX; Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT; An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

CHRONIC EFFECT; Adverse effects that are most likely to occur from repeated exposure over a long period of time.

ESTD PEL/TLV; This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES; Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes.

Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

PRIMARY ROUTE OF ENTRY; The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING; Ingestion - A primary route of exposure through swallowing of material

INH; Inhalation - A primary route of exposure through breathing of vapors.

SKIN; A primary route of exposure through contact with the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.

MSHA; Mine Safety and Health Administration

NIOSH; National Institute for Occupational Safety and Health

SECTION V: PHYSICAL DATA

EVAPORATION RATE; it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH; A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)

VOC CONTENT; The percentage of or amount in pounds per gallon of the product that is regulated as a Volatile Organic Compound under the Clean Air Act of 1990 and various state jurisdictions.

SOLUBILITY IN WATER; A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION; Breakdown products expected to be produced upon product decomposition or fire.

INCOMPATIBILITY; Material contact and the conditions to avoid to prevent hazardous reactions.

POLYMERIZATION; Indicates the tendency of the product's molecules to combine with themselves in a chemical reaction, releasing excess pressure and heat.

STABILITY; Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS; RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA; Clean Water Act- Federal Law which regulates chemical releases to bodies of water.

RQ; Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.

TSCA; Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.



North American Refractories Co.

A Member of The Didier Group

500 Halle Building
1228 Euclid Avenue
Cleveland, Ohio 44115-1809
(216) 621-5200

NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

NORTH AMERICAN REFRACTORIES
500 HALLE BUILDING
1228 EUCLID AVENUE
CLEVELAND, OHIO 44115-1809

MSDS # 3066-50

Vendor:

Emergency Phone Number
U.S. (814) 234-7981 X250....D.Abrino
(814) 236-3890.....K.Nelson
Canada (905) 639-8660.....D.Persaud

MSDS prepared by:
NORTH AMERICAN REFRACTORIES
Technical Center (814) 234-7981

Date Issued: 08/14/98

Date Revised: 11/04/97

Product Type: Refractory Castable / Gun Material

Trade Name: DURAKAST 56ER

Product SARA Hazard Class: (1) Immediate or Acute (Irritant)
(2) Delayed or Chronic

WHMIS Hazard Class (CANADA): Class D - Division 2 - Sub Division A
Untested mixture containing a very toxic material
Class D - Division 2 - Sub Division B
Untested mixture containing a toxic material

SARA NOTICE: This product DOES NOT contain any chemicals that
are subject to the reporting requirements of
section 313 of Title III of the Superfund Amend-
ments and Reauthorization Act of 1986 and Part 40
CFR Part 372.

***** SECTION I - PRODUCT IDENTIFICATION *****

Chemical Name: Fireclay Castable
Chemical Family: $Al_2O_3 \cdot SiO_2 \cdot CaO \cdot Al_2O_3$

***** SECTION II - CHEMICAL COMPOSITION *****

Hazardous Ingredients:	CAS Number:	PCT:
Crystalline Silica including: N/A		10.0 - 30.0%
Quartz	14808-60-7	
Cristobalite	14464-46-1	
Tridymite	15468-32-3	
Other Ingredients:	CAS Number:	PCT:



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Alumina Silicate	1302-93-8	15.0 - 40.0%
Hydrous Alumina Silicate	12141-46-7	5.0 - 10.0%
Hydraulic Setting Cement	65997-16-2	10.0 - 30.0%
Organic Fibers	9003-07-0	0.1 - 1.0%
Amorphous Silica	7631-86-9	10.0 - 30.0%

***** SECTION III - PHYSICAL DATA *****

Appearance and Odor: Tan, granular, dry mixture, odorless.

Specific Gravity: Not available.
Vapor Pressure (mm): Not applicable.
Vapor Density (air=1): Not applicable.
Boiling Point (3F): Not available.
Solubility in Water: Nil.
pH: 9 to 10.9 range
Density: 2.5 to 3.4 gm/cc range

***** SECTION IV - FIRE AND EXPLOSION HAZARD *****

Flammability: This product is non-flammable and will not support combustion.

***** SECTION V - HEALTH HAZARD *****

Threshold Limit Value:

For respirable dust containing crystalline silica:

OSHA: For Respirable Dust:
10 divided by (% Quartz + 2)
expressed in mg/m³.

ACGIH: Quartz.....0.1mg/m³
Cristobalite....0.05mg/m³
Tridymite.....0.05mg/m³

For all ingredients not listed above:

OSHA:.....10mg/m³ total dust
ACGIH:.....10mg/m³ total dust

Effects of Overexposure:

Chronic exposure to dust could cause pulmonary problems.

CEMENT:

Cement may cause irritation to skin and eyes.
Low toxicity via inhalation route. Pulmonary fibrosis due to cement dust occurs rarely if at all. Cement may be an allergen in some people.
Note: LD50 and LC50 is not available for "Cement"

CRYSTALLINE SILICA:

Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite,



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and tridymite) can cause delayed lung injury (silicosis) or cancer.

Points of attack: Respiratory system and lungs.

Route of entry: Inhalation.

Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

The International Agency for Research on Cancer (IARC) has classified crystalline silica as a Group 1 carcinogen, stating that "there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica..."

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:

- (1) IARC Monograph, Volume 42
- (2) NIOSH Document No. 75-120
- (3) NTP Report on Carcinogens

Toxicity data:

Quartz: LCLo: 300ug/m³ / 10Y-I
inhalation human
Cristobalite: TCLo: 16 mppcf/8H/17.9Y-I
inhalation human
Tridymite: TCLo: 16 mppcf/8H/17.9Y-I
inhalation human
Note: LD50 and LC50 not available.

CARCINOGENICITY INFORMATION

With the exception of:

Crystalline silica

No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of carcinogens.

Emergency and First Aid Data:

Skin: Wash thoroughly with soap and water.

Inhalation: Remove to fresh air.

Eyes: Flush with water for 15 minutes and get medical help.

SECTION VI - REACTIVITY DATA

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Crystalline silica levels in used refractories may be higher or lower than as-shipped depending



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on service conditions. Hygiene monitoring should be done to insure the proper employee protection during tearout.

***** SECTION VII - SPILL AND LEAK PROCEDURES *****

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure during cleanup.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates.

***** SECTION VIII - INDUSTRIAL HYGIENE INFORMATION *****

Ventilation: Sufficient ventilation should be used to insure exposures below the TLV/PEL.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Recommended.

***** SECTION IX - SPECIAL PRECAUTIONS *****

Special Precautions: Avoid dust generation.

Dust created during demolition of used product may contain crystalline silica.

***** SECTION X - SPECIAL INFORMATION *****

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up). Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.



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NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

NORTH AMERICAN REFRACTORIES
500 HALLE BUILDING
1228 EUCLID AVENUE
CLEVELAND, OHIO 44115-1809

MSDS # 5020-00

Vendor:

Emergency Phone Number
U.S. (814) 234-7981 X250....D.Abrino
(814) 236-3890.....K.Nelson
Canada (905) 639-8660.....D.Persaud

MSDS prepared by:
NORTH AMERICAN REFRACTORIES
Technical Center (814) 234-7981

Date Issued: 08/14/98

Date Revised: 05/13/98

Product Type: Refractory Plastic Or Ram Material

Trade Name: NARPHOS 85P

Product SARA Hazard Class: (1) Immediate or Acute (Irritant)
(2) Delayed or Chronic

WHMIS Hazard Class (CANADA): Class D - Division 2 - Sub Division A
Untested mixture containing a very toxic material
Class D - Division 2 - Sub Division B
Untested mixture containing a toxic material

SARA NOTICE: This product may contain a chemical(s) subject to
the reporting requirements of section 313 of
Title III of the Superfund Amendments and
Reauthorization Act of 1986 and Part 40 CFR
Part 372. For the name and amount of the subject
chemical, see Section II - CHEMICAL COMPOSITION
of this Product Safety Data Sheet.

SECTION I - PRODUCT IDENTIFICATION

Chemical Name: Al₂O₃, SiO₂, H₃PO₄
Chemical Family: Phos Bond High Alumina Refractories Plast

SECTION II - CHEMICAL COMPOSITION

Hazardous Ingredients:

CAS Number:

PCT:

Crystalline Silica including: N/A

0.5 - 1.5%

Quartz 14808-60-7
Cristobalite 14464-46-1
Tridymite 15468-32-3

Other Ingredients:

CAS Number:

PCT:



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MSDS # 5020-00 cont.

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Hydrous Alumina Silicate	12141-46-7	1.0 -	5.0%
Alumina (non-fibrous)	1344-28-1	10.0 -	30.0%
Alumina Silicate	1302-93-8	60.0 -	100.0%
**Phosphate acid binder(as P2O5)	7664-38-2	1.0 -	5.0%
Hydrous Alumina Silicate	1302-78-9	3.0 -	7.0%
Water (added)	7732-18-5	3.0 -	7.0%

**Chemical(s) subject to Section 313 of Title III of the SuperFund
Amendments and Reauthorization Act of 1986 and CFR Part 372

***** SECTION III - PHYSICAL DATA *****

Appearance and Odor: Gray, granular, wet mixture, odorless

Odor threshold (p.p.m.): Not applicable.

Specific Gravity: Not available.

Vapor Pressure (mm): Not applicable.

Vapor Density (air=1): Not applicable.

Boiling Point (3F): Not available.

Solubility in Water: Not available.

% Volatile (by weight): Not applicable.

pH: 2.5 to 5 range

Density: Not available.

Coefficient of Water/Oil Distribution: Not applicable.

***** SECTION IV - FIRE AND EXPLOSION HAZARD *****

Flammability: This product is non-flammable and will not support
combustion.

Special fire fighting procedures: Use
self-contained breathing apparatus.

Unusual Fire and Explosion Hazards:

Thermal decomposition products from phosphate
binder may be hazardous and may contain irritating
phosphoric oxide fumes.

***** SECTION V - HEALTH HAZARD *****

Threshold Limit Value: Phosphoric Acid Mist 1 mg/m³

For respirable dust containing crystalline silica:

OSHA: For Respirable Dust:
10 divided by (% Quartz + 2)
expressed in mg/m³.

ACGIH: Quartz.....0.1mg/m³
Cristobalite....0.05mg/m³
Tridymite.....0.05mg/m³

For all ingredients not listed above:

OSHA:.....10mg/m³ total dust
ACGIH:.....10mg/m³ total dust

Effects of Overexposure:



North American Refractories Co.

A Member of The Didier Group

500 Halle Building
1228 Euclid Avenue
Cleveland, Ohio 44115-1809
(216) 621-5200

MSDS # 5020-00 cont.

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SKIN CONTACT--SEVERE IRRITANT--MAY CAUSE BURNS
INHALATION--SEVERE IRRITANT
INGESTION--burns to mouth, throat, and stomach

Chronic Effects: None identified.

CARCINOGENICITY INFORMATION

With the exception of:

Crystalline silica

No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of carcinogens.

Emergency and First Aid Data:

EYE CONTACT: Immediately flush with large amounts of water for at least 15 minutes.

SEEK MEDICAL AID.

SKIN CONTACT: Wash thoroughly with soap and water. If irritation persists, SEEK MEDICAL AID.

INHALATION: Remove to fresh air. If breathing has stopped or is difficult, administer artificial respiration or oxygen as indicated. SEEK MEDICAL AID.

INGESTION: DO NOT INDUCE VOMITING! If victim is conscious give water, milk or milk of magnesia. SEEK MEDICAL AID.

SECTION VI - REACTIVITY DATA

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Emits toxic fumes of phosphorus when heated. Crystalline silica levels in used refractories may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring should be done to insure the proper employee protection during tearout.

Flammable Hydrogen gas may be produced on prolonged contact between liquid components and metals.

SECTION VII - SPILL AND LEAK PROCEDURES

Steps to be Taken in Case of a Spill:

Avoid generating dust exposure when materials are dried.

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates.



North American Refractories Co.

A Member of The Didier Group

500 Halle Building
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Cleveland, Ohio 44115-1809
(216) 621-5200

MSDS # 5020-00 cont.

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***** SECTION VIII - INDUSTRIAL HYGIENE INFORMATION *****

Ventilation: Sufficient ventilation should be used to insure exposures below the TLV/PEL.

Respiratory Protection: NIOSH approved dust type for exposures above TLV.

Protective Clothing and/or Barrier Creams:

As required, industrial resistant flexible-type gloves (rubber, neoprene, PVC, or equal). Wear industrial-type work clothing and safety footwear. Depending on working conditions, i.e., contact potential, wear resistant protective garments, such as aprons, jackets, pants, coveralls, boots, etc.

Protective Gloves: Impervious gloves recommended.

Eye Protection: Industrial safety glasses, minimum. When needed for 29 CFR 1910.133 (work area conditions), use side shields, goggles and/or faceshield. Chemical goggles. Face shield (if splashing is possible).

***** SECTION IX - SPECIAL PRECAUTIONS *****

Special Precautions: Avoid dust generation.
Dust created during demolition of used product may contain crystalline silica.

If applied to a hot surface, sufficient ventilation to maintain exposures below the PEL or respiratory protection is needed.
Avoid prolonged skin contact.

***** SECTION X - SPECIAL INFORMATION *****

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up).
Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.

Material Safety Data Sheet
For Hardened Portland Cement Concrete Only

Providers of this MSDS must complete Section I:

- Manufacturer's Name, Address
- Supplier's Name, Address
- Emergency Telephone Number

Material Safety Data Sheet

For

Hardened Portland Cement Concrete

Section I - Identity

Manufacturer's name and address:

Supplier's name and address:

Emergency Telephone Number:

Chemical Name & Synonyms: Not applicable

Trade Name & Synonyms: Ready mixed concrete; concrete; hardened concrete; non-plastic concrete; cement (as in "cement" sidewalk).

Revision Date: October, 1998

Chemical Family: Portland cement concrete products

Formula: Mixtures of cementitious materials, aggregates, minor percentages of chemical and mineral admixtures and water in various proportions.

Molecular Weight: Not applicable

Material Use: Construction material

Section II - Hazardous Ingredients of Material

Portland cement concrete is a mixture of gravel or rock, sand, portland cement and water. It may also contain chemical admixtures and/or fly ash and/or granulated slag and/or silica fume and/or other constituents that have no effect on the hazards associated with the use of the product. The chemical admixtures are present in quantities comprising less than 1% of the material.

	<u>CAS #</u>	<u>%</u>	<u>1994-95 TLV</u>	<u>OSHA PEL</u>
Portland Cement	65997-15-1	>1%	10 mg/m ³	15 mg/m ³ Total Dust 5 mg/m ³ Respirable Dust
Silica (quartz)	14808-60-7	>0.1%	0.1 mg/m ³ *	<u>10 mg/m³</u> % silica*+2
Calcium Hydroxide	1305-62-0	>1%	5 mg/m ³	15 mg/m ³ Total 5 mg/m ³ Respirable Dust

* Respirable Fraction

Section III - Physical Data of Material

Physical State:	Solid
Odor and Appearance:	Odorless, gray color; may be tan if color has been added.
Odor Threshold:	None
Specific Gravity:	Normal range 1.5 to 2.9
Vapor Pressure:	Not applicable
Vapor Density:	Not applicable
Evaporation Rate:	Not applicable
Boiling Point:	Not applicable
Solubility in Water:	0.1%, max.; generally considered insoluble in water

Section IV - Fire and Explosion Hazard of Material

Not applicable

Section V - Reactivity Data

Stability: Stable

Incompatibility: Hardened concrete will react with most acids in a neutralization-type reaction. Heat, spattering and evolution of potentially toxic gases (such as HCl, NO or NO₂) may result depending on the acid involved. Prolonged contact of an acid with the concrete may cause etching or other damage.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VI - Health Hazard Data

Sawing, grinding, polishing, abrasive wear or demolition techniques may result in exposure to dust that may contain portland cement, calcium hydroxide and crystalline silica.

Acute Effects: The dust can dry the skin, cause alkali burns or irritation and irritate the eyes and the upper respiratory tract. Ingestion can cause inflammation of the throat. The coarse nature of the dust may be abrasive to skin. Water in contact with hardened portland cement concrete may release small amount of alkaline calcium hydroxide to the contact water. Alkaline water (i.e. pH >7) can cause skin and eye irritation.

Chronic Effects: Exposure to dust may cause inflammation of the tissue lining the interior of the nose and the cornea of the eye. Hypersensitive people may develop allergic dermatitis. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis.

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e. eyes, nose, and upper respiratory system). Redness or irritation at contact points where continuous rubbing occurs. Shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement of failure characterize silicosis.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Hardened concrete is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as Reasonably anticipated to be a carcinogen. OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Irrigate eyes immediately and repeatedly with large volumes of water and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings to abraded areas. In cases of accidental ingestion of dust, drink one or two glasses of milk or water. Do not induce vomiting. In cases of accidental ingestion of portland cement concrete contact water, drink one or two glasses of water. Do not induce vomiting. In cases of severe exposure, consult a physician.

Section VII - Preventive Measures

Personal Protective Equipment: Use impermeable gloves, boots and clothing to prevent skin contact with dust and contact water. Wear safety glasses or goggles to prevent contact of dust or of contact water with eyes. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators with dust filtering capability if exposed to dust from hardened concrete when sawing, grinding, polishing, removing abraded dust or using demolition techniques. (Advisory: Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Engineering Controls: Provide ventilation when sawing, grinding, polishing, removing abraded dust or using demolition techniques to maintain dust concentrations below exposure limits listed in Section II.

Leak and Spill Procedure: Sweep and/or shovel dust into waste disposal containers. Use wet sweeping or flush with water for final clean up of floors, walkways, etc. Dispose of portland cement concrete dust in accordance with all local, state and federal requirements. Hardened portland cement concrete may be disposed on land or recycled to obtain the sand, gravel or crushed stone. Water in contact with hardened portland cement concrete does not require unusual disposal practices and may be allowed to evaporate in place or drain from the site.

Material Safety Data Sheet

For Unhardened Concrete Only

Providers of this MSDS must complete Section I:

- **Manufacturer's Name, Address**
- **Supplier's Name, Address**
- **Emergency Telephone Number**

Material Safety Data Sheet

For

Unhardened Concrete

Section I - Identity

Manufacturer's name and address:

Supplier's name and address:

Emergency Telephone Number:

Chemical Name & Synonyms: Plastic concrete, concrete slurry, unset concrete

Date Revised: October, 1998

Section II - Hazardous Ingredients

Unhardened concrete is a slurry of portland cement, aggregate, silica sand, and various admixtures used to enhance concrete performance characteristics.

	<u>CAS #</u>	<u>%</u>	<u>1994-95 TLV</u>	<u>OSHA PEL</u>
Portland Cement	65997-15-1	>1%	10 mg/m ³	15 mg/m ³ Total Dust 5 mg/m ³ Respirable Dust
Silica (quartz)	14808-60-7	>0.1%	0.1 mg/m ³ *	10 mg/m ³ % silica*+2
Calcium Oxide	1305-78-8	>1%	2 mg/m ³	5 mg/m ³

* Respirable fraction

NOTE: Unhardened concrete is a wet slurry and dusting is not a concern .

Section III - Physical/Chemical Characteristics

Boiling Point:	Not applicable
Specific Gravity (H ₂ O=1):	2.20 - 2.60
Vapor Pressure (mmHg):	Not applicable
Melting Point:	Not applicable
Vapor Density (Air=1):	Not applicable
Evaporation Rate:	Not applicable
Solubility in Water:	Slight; 0.1-1.0%
Appearance and Odor:	Thick gray slurry; alkaline, earthy odor

Section IV - Fire and Explosion Hazard of Material

Flash Point (Method Used):	Not Applicable
Flammable Limits:	Not Applicable
LEL/UEL:	Not Applicable
Extinguishing Media:	Not Applicable
Special Firefighting Procedures:	Not Applicable
Unusual Fire and Explosion Hazards:	Not Applicable

Section V - Health Hazard Data

Route of Exposure:	Inhalation?	No
	Skin?	Yes
	Eyes?	Yes
	Ingestion?	Yes

Health Hazards (acute and chronic):

Acute: Contact with unhardened concrete and the bleed water can produce severe skin burns; development of pain symptoms may be delayed several hours. Irritation of both eyes and tissue lining of nose can be severe. Prolonged contact can cause severe alkali burns. Hypersensitive individuals may develop an allergic-type of dermatitis (cement in concrete may contain traces of chromium). Pre-existing skin conditions may be worsened.

Chronic: Dermatitis can result from continued contact of unprotected skin with unhardened concrete. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis. Shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement characterizes silicosis. Silicosis may aggravate other chronic conditions and may increase the risk of pulmonary tuberculosis infection.

Unhardened <u>Concrete</u>	Portland <u>Cement</u>	Silica (<u>Quartz</u>)	Calcium <u>Oxide</u>
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Carcinogenicity:

NTP:	No	No	Yes	No
IARC:	No	No	Yes	No
OSHA regulated:	No	No	No	No

Respiratory exposure to silica in unhardened concrete is not a concern.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with water and get prompt medical attention. Wash exposed skin areas with soap and water.

Section VI - Reactivity Data

Stability:	Unhardened concrete will consolidate and harden to a continuous mass, compressive strength increasing with time.
Incompatibility (Materials to Avoid):	Not Applicable
Hazardous Decomposition or By-Products:	Not Applicable
Hazardous Polymerization:	Will not occur:
Conditions to Avoid:	Not Applicable

Section VII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled: Emergency procedures are not required.

Waste disposal method: Material can be disposed of as common waste or returned to a container for later use if it is not contaminated.

Precautions to be taken in handling or storing: **AVOID CONTACT WITH SKIN AND EYES.** Skin of hands, feet, and lower legs, including the knees, is especially vulnerable (e.g., concrete finishers).

Other precautions: Use personal protective equipment (PPE) as described in Section VIII, Control Measures.

Section VIII - Control Measures

Respiratory protection:	Respiratory protection should not be necessary when handling unhardened concrete. However, a NIOSH-approved dust respirator is recommended when handling dry cement or when cutting or otherwise abrading hardened concrete.
Ventilation:	Local exhaust ventilation should not be necessary when handling unhardened concrete. However, local exhaust ventilation can be used to control airborne dust levels that may be generated while handling dry cement or when cutting or otherwise abrading hardened concrete.
Protective gloves:	Select chemical and abrasion resistant gloves to provide protection against skin contact with unhardened concrete and the bleed water. Avoid contaminating the inside of protective gloves with concrete or bleed water.
Eye Protection:	Use tight fitting goggles.

Other Protective Clothing or Equipment:

Use impermeable boots, gloves, aprons and clothing that will protect all potentially exposed skin, and prevent contact with unhardened concrete and the bleed water. Immediately remove and/or rinse with fresh water clothing that has become wetted or saturated by unhardened concrete or bleed water. Contaminated clothing that remains in contact with the skin can cause skin burns.

Work/Hygienic Practices:

Wash hands frequently during the workday with fresh water and pH-neutral soap. Immediately after working with unhardened concrete, workers should shower with pH-neutral soap and fresh water. Avoid placing hands in the rinse water used to clean tools; concrete residue in the rinse water causes the water to become highly alkaline. Precautions must be observed because the alkaline cement in concrete can cause severe burns without warning; little heat is sensed.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

41-10-98

MATERIAL SAFETY DATA SHEET 3901

Date: 08/11/97

No. 3901

**A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265**

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: GREENCAST®-45-L
GREENCAST®-45-L Plus

PRODUCT TYPE: Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

<u>CHEMICAL FAMILY:</u> SiO ₂ = 36-42%	Al ₂ O ₃ = 44-50%	<u>FORMULA:</u> Not Applicable
CaO = 9-12%	Fe ₂ O ₃ = 1-2%	

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (5-20%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (<2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Fume Silica (SiO ₂) (<5%)	2 mg/m ³ * Respirable Dust	69012-64-2
Refractory Cement (25-35%)	None (See Section IV)	12005-57-1

*Source: American Conference of Governmental Industrial Hygienists, 1996.

SECTION III

HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV
FIRST AID MEASURES

EFFECT OF OVEREXPOSURE:

EYES: ACUTE: Dust can cause mechanical irritation. Product's cement can cause eye irritation.
CHRONIC: None Known

SKIN: ACUTE: Product's cement can cause skin irritation.
CHRONIC: None Known

INHALATION: ACUTE: Dust generated can cause breathing discomfort or irritation.
CHRONIC: Long-term exposure to dust may cause lung damage.

INGESTION: ACUTE: Unknown
CHRONIC: Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V
FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray, Granular Mixture		
BOILING POINT:	Not Applicable	pH:	9-11
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	2.0	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 02/20/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

JH:\MSDS\CURRENT\GC45L.087



**Material Safety Data Sheet
for
Masonry Cement**

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Masonry Cement

Trade Name and Synonyms: Masonry Cement, Masonry Cement Type N,
Masonry Cement Type S

Revision Date: March, 1998

Chemical Family: Calcium Salts

Description: Masonry cement consists of portland cement, a finely ground portland cement clinker mixed with a small amount of gypsum to control set, calcium carbonate (i.e. limestone), and minor quantities (generally <1 percent) of chemical and/or mineral admixtures. Masonry cement may also contain quartz sand.

Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in masonry cement:

3CaO.SiO ₂	(CAS # 12168-85-3)
2CaO.SiO ₂	(CAS # 10034-77-2)
3CaO.Al ₂ O ₃	(CAS # 12042-78-3)
4CaO.Al ₂ O ₃ .Fe ₂ O ₃	(CAS # 12068-35-8)
CaSO ₄ .XH ₂ O	(CAS # 13397-24-5)
Calcium Carbonate	(CAS # 1317-65-3)

Small amounts of CaO, MgO, K₂SO₄, Na₂SO₄ may also be present.

Section II - Hazardous Ingredients - Continued

Hazardous Components:

Quartz Sand (silica)

OSHA PEL: 10 mg/m³/% SiO₂ - 2 (for respirable fraction)

ACGIH TLV (1994-95): 0.1 mg/m³

Portland Cement

OSHA PEL: 10 mg/m³ total dust*
5 mg/m³ respirable fraction

ACGIH TLV (1994-95): 10 mg/m³ total dust*

*Only if less than 1% quartz and no asbestos is present. See PEL TLV for quartz, above.

Calcium Carbonate

OSHA PEL: 15 mg/m³ total dust*
5 mg/m³ respirable fraction

ACGIH TLV (1994-95): 10 mg/m³ total dust*

*Only if quartz is not present. See PEL/TLV for quartz above.

Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable. masonry cement is a powdered solid.

Solubility in Water: Slight (0.1-1.0%)

Specific Gravity: (H₂O=1) 2.8 - 3.0

Evaporation Rate: Not applicable

Appearance and Odor: Gray powder, no odor.

Melting Point: Not applicable

Section IV-Fire and Explosion Hazard Data

Flash Point: Masonry cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

Section V-Health Hazard Data

Acute Effects: Wet cement on unprotected skin can cause severe caustic burns. **NOTE: Cement burns skin with little warning.** Dry cement can produce mild irritation to severe burns of the eye; it can irritate the upper respiratory system.

Chronic Effects: Dry cement can cause inflammation of the lining of the nose and the cornea. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium @ < 0.05%). Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement and/or failure.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings; seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

Section VI-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Contact with acids will produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VII-Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

Section VIII - Special Protection Information

Respiratory Protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



**Material Safety Data Sheet
for
Durapoz™**

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcined clay with gypsum

Trade Name and Synonyms: Durapoz™

Revision Date: March, 1998

Chemical Family: Pozzolans

Description: Durapoz™ is a blended pozzolan consisting of calcined clay interground with gypsum. It is an additive used in making concrete.

Section II - Hazardous Ingredients

Ingredients: The following substances are known to be present in Durapoz™:

Amorphous alumino silicates
Calcium sulfate dihydrate (gypsum)
Forms of crystalline silica*

* Durapoz™ contains greater than 0.1% crystalline silica.

Section II - Hazardous Ingredients - Continued

Hazardous Components:

Amorphous Alumino Silicates (No CAS # Available)

ACGIH TLV-TWA (1989) = 10 mg/m³ as inhalable particulates not otherwise classified (PNOC)

ACGIH TLV-TWA (1995) = 3 mg/m³ as respirable particulates not otherwise classified (PNOC)

OSHA PEL (8-Hour TWA) = 15 mg/m³ as particulates not otherwise regulated (PNOR) total dust

OSHA PEL (8-Hour TWA) = 5 mg/m³ as particulates not otherwise regulated (PNOR) respirable dust

Gypsum (CAS # 7778-18-9)

ACGIH TLV-TWA (1986) = 10 mg total dust / m³

OSHA PEL (8-Hour TWA) = 15 mg total dust / m³

OSHA PEL (8-Hour TWA) = 5 mg respirable dust / m³

Quartz (CAS# 14808-60-7)

ACGIH TLV-TWA (1986) = 0.10 mg respirable quartz dust / m³

OSHA PEL (8-Hour TWA) = (10 mg respirable quartz dust / m³) / (percent silica + 2)

NIOSH REL (8-Hour TWA) = 0.05 mg respirable quartz dust / m³

Cristobalite (CAS# 14464-46-1) and Tridymite (CAS# 15468-32-3)

ACGIH TLV-TWA (1986) = 0.05 mg respirable cristobalite dust / m³

OSHA PEL (8-Hour TWA) = ((10 mg respirable cristobalite dust / m³) / (percent silica + 2)) ÷ 2

NIOSH REL (8-Hour TWA) = 0.05 mg respirable cristobalite dust / m³

Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable, Durapoz™ is a powdered solid.

Solubility in Water: Minimal; solubility is related to the presence of gypsum

Specific Gravity: (H₂O=1) 2.40 ± 0.05

Evaporation Rate: Not applicable

Appearance and Odor: Color ranges from buff to gray; no odor.

Melting Point: Not applicable

Section IV-Fire and Explosion Hazard Data

Flash Point: Durapoz™ is noncombustible and not explosive.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

Section V-Health Hazard Data

Relevant Routes of Exposure: Skin contact, eye contact, and inhalation

Effects Resulting from Eye Contact: Dust in the eyes may result in mechanical irritation and inflammation.

Effects Resulting from Skin Contact: Exposure to dust from this product may cause mechanical irritation or inflammation of the skin.

Effects Resulting from Inhalation: Durapoz™ contains crystalline silica. Prolonged exposure to respirable crystalline silica may aggravate other lung conditions. It also may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or other diseases. (Also see "Carcinogenic Potential" below.)

Carcinogenic Potential: NTP, IARC or OSHA does not list calcined clay and gypsum as carcinogens.

Crystalline silica is now classified by IARC as a known human carcinogen (Group 1). NTP has characterized respirable silica as "reasonably anticipated to be [a] carcinogen."

Emergency and First Aid Procedures: Irrigate eyes immediately with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles and get prompt medical attention if irritation persists.

Remove dust from skin by flushing with water or by washing with soap and water.

If inhaled, remove person to fresh air. Seek medical help if coughing and other symptoms do not subside.

Section VI-Reactivity Data

Stability: Product is stable.

Incompatibility: No known incompatibilities.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VII-Spill Procedures

Steps to be taken in case material is spilled: Use cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Dispose of waste material in accordance with Federal, State and local requirements. Since Durapoz™ is stable, uncontaminated material may be saved for future use. Durapoz™ is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261) and except for crystalline silica does not contain hazardous constituents.

Section VIII - Special Protection Information

Skin Protection: Wear long pants and long-sleeved shirts when handling Durapoz™. Protect hands with leather or cotton work gloves.

Eye Protection: Wear safety glasses with sideshields. In extremely dusty environments and unpredictable environments (e.g. windy), wear unvented or indirectly vented goggles to avoid eye irritation or injury.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



10/98

Material Safety Data Sheet
for
Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225
Emergency Telephone Number: (913) 451-8900
Information Telephone Number: (913) 451-8900
Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime, unslaked lime
Trade Name and Synonyms: Pebble Quicklime, Cal-Max
CAS No.: 1305-78-8
Date Revised: March, 1998

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Quicklime, CaO	1305-78-8	5 mg/m ³	2 mg/m ³
Quartz, crystalline silica	14808-60-7	PEL = $\frac{10\text{mg/m}^3}{\% \text{SiO}_2^{*+2}}$	0.1*

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family: Inorganic Base Evaporation Rate: Not Applicable
Molecular Weight: 56.10
Boiling Point: 5162°C
Melting Point: 4737°F
Specific Gravity: 3.2-3.4
Vapor Density: (Air=1): Not Applicable
Solubility in Water: 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C
Appearance and Odor: White granular or powder; faint earthy odor

Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable LEL: Not Applicable UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
2. Skin contact: corrosive
 - a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. Eye contact: corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO

Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.



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**Material Safety Data Sheet
For
Duracem® Portland Cement**

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

Emergency Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Portland Cement (CAS #65997-15-1)

Trade Name and Synonyms: Duracem®; IP

Revision Date: March, 1998

Chemical Family: Calcium Salts

Formula: Duracem® portland cement consists of finely ground portland cement clinker mixed with a pozzolanic material and a small amount of calcium sulfate (gypsum) to control set. No specific formula applies to portland cement.

Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in portland cement:

3CaO.SiO ₂	(CAS # 12168-85-3)
2CaO.SiO ₂	(CAS # 10034-77-2)
3CaO.Al ₂ O ₃	(CAS # 12042-78-3)
4CaO.Al ₂ O ₃ .Fe ₂ O ₃	(CAS # 12068-35-8)
CaSO ₄ .XH ₂ O	(CAS # 13397-24-5)

Small amounts of CaO, MgO, K₂SO₄, Na₂SO₄ may also be present.

Hazardous Components(s):

Substance	CAS Number	OSHA PEL	ACGIH TLV-TWA	MSHA Exposure Limits
Portland Cement - total dust	65997-15-1	15 mg/m ³	10 mg/m ³ (1986) *	10 mg/m ³
Portland Cement - respirable dust	65997-15-1	5 mg/m ³	3 mg/m ³ (1995) *	Not Applicable
Quartz	14808-60-7	<u>10 mg/m³</u> (% silica + 2)	0.1 mg/m ³ (1986) (respirable fraction)	<u>10 mg/m³</u> (% silica + 2)
Cristobalite	14464-46-1	One half the value calculated by this formula: <u>10 mg/m³</u> (% silica + 2)	0.05 mg/m ³ (1986) (respirable fraction)	One half the value calculated by this formula: <u>10 mg/m³</u> (% silica + 2)

Note: Duracem® cement produced at the Leamington, Utah plant contains > 0.1% cristobalite. Duracem® cement from other Ash Grove plants contains > 0.1% quartz. * Applicable if <1% crystalline silica is present.

Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable.

Solubility in Water: Slight (0.1-1.0%)

Specific Gravity: ($H_2O=1$) 2.9 - 3.1

Evaporation Rate: Not applicable.

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

Section IV - Fire and Explosion Hazard Data

Flash Point: Portland cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not,applicable.

Section V - Health Hazard Data

Acute Effects: Wet cement on unprotected skin can cause severe caustic burns. **NOTE: Cement burns skin with little warning.** Dry cement can produce mild irritation to severe burns of the eye; it can irritate the upper respiratory system.

Chronic Effects: Dry cement can cause inflammation of the lining of the nose and the cornea. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium @ < 0.05%). Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Section V - Health Hazard Data - Continued

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement and/or failure.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings; seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

Section VII-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Cement is highly alkaline and will react with acids to produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VII - Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

Section VIII - Special Protection Information

Respiratory Protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

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Material Safety Data Sheet for Cement Kiln Dust

Section I - Identity

10/98

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Cement Kiln Dust: CKD

Chemical Name and Synonyms: A mixture of sulfates, chlorides, carbonates, and oxides of sodium, potassium and calcium: quartz (CAS No. 01-4808-60-7), limestone (CAS No. 1317-65-3), fly ash, dolomite, feldspars, and iron oxides; glasses of silicon dioxide, aluminum oxide and iron oxide; and cement compounds (CAS No. 65997-15-1). Cement kiln dust (CKD) is a partially calcined mineral mixture created by electrostatic precipitators (ESPs) or by other air pollution control devices (APCDs), and deposited in ESP collection bins.

When waste-derived fuels comprise a part of the fuel source, CKD may contain 200-2000 ppm lead and traces of other heavy metals, including, but not limited to, arsenic, chromium, cadmium, antimony, barium, beryllium, silver, mercury, thallium, selenium and nickel.

Calcium oxide may also be present in freshly generated CKD. If CKD is mixed with water, the calcium oxide will hydrate to form calcium hydroxide.

Revision Date: March, 1998

Section II - Hazardous Ingredients

	OSHA PEL	1994-1995 ACGIH TLV	Carcinogen Status
Inert or Nuisance Dust Respirable Fraction Total Dust	5 mg/m ³ 15 mg/m ³	3 mg/m ³ 10 mg/m ³	Not Applicable
Calcium oxide, Quicklime, CaO	5 mg/m ³	2 mg/m ³	Not Applicable
Hydrated Lime, Ca(OH) ₂ : Total: Respirable:	15 mg/m ³ 5 mg/m ³	5 mg/m ³ (Total)	Not Applicable
Respirable Quartz, Free Silica, SiO ₂	$\frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$	0.1 mg/m ³	NTP - Yes IARC - Yes OSHA - No
Total Quartz, Free Silica, SiO ₂	$\frac{30 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$	Not Applicable	NTP - Yes IARC - Yes OSHA - No

CKD contains greater than 0.1% crystalline silica.

Section II - Hazardous Ingredients (Continued)

Metals - Representative Exposure Limits			
	OSHA PEL	1995-1996 ACGIH - TLV	Carcinogen Status
Arsenic	0.01 mg/m ³	0.01 mg/m ³	OSHA - Yes IARC - Yes NTP - Yes
Chromium	1.0 mg/m ³	0.50 mg/m ³	OSHA - No IARC - Yes NTP - Yes
Cadmium	0.005 mg/m ³	0.01 mg/m ³	OSHA - Yes IARC - Yes NTP - Yes
Lead	0.05 mg/m ³	0.05 mg/m ³	OSHA - No IARC - Yes NTP - No
Antimony	0.50 mg/m ³	0.50 mg/m ³	OSHA - No IARC - No NTP - No
Barium	0.50 mg/m ³	0.50 mg/m ³	OSHA - No IARC - No NTP - No
Beryllium	2 µg/m ³	2 µg/m ³	OSHA - No IARC - Yes NTP - Yes
Silver	0.01 mg/m ³	0.01 mg/m ³	OSHA - No IARC - No NTP - No
Mercury	C* = 0.1 mg/m ³	0.025 mg/m ³ SKIN **	OSHA - No IARC - Yes NTP - No
Thallium	0.1 mg/m ³	0.1 mg/m ³ , SKIN**	OSHA - No IARC - No NTP - No
Selenium	0.20 mg/m ³	0.20 mg/m ³	OSHA - No IARC - Yes NTP - Yes
Nickel	1 mg/m ³	0.1 mg/m ³	OSHA - No IARC - Yes NTP - Yes

*C = Ceiling

** SKIN = can be absorbed through skin

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base with mixed inorganic oxides and salts
Specific Gravity:	2.82
Vapor Pressure(mm Hg):	N/A
Vapor Density:	(Air=1) N/A
Evaporation Rate:	NA
Solubility in Water:	1.0 to 12%
Appearance and Odor:	Buff colored powder; odorless
Melting Point:	N/A

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): N/A; Cement Kiln Dust is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: N/A

Special Fire Fighting Procedures: Cement Kiln Dust is incombustible

Firefighting Media: N/A

CAUTION: Saturated water solutions of cement kiln dust can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Route(s) of Entry of cement kiln dust: Inhalation; skin; eyes; ingestion

1. Inhalation:

- a. **Acute exposure:** Freshly generated CKD may be corrosive to damp moist skin if calcium oxide and calcium hydroxide are present. Inhalation of this dust may cause sore throat, coughing, choking, and dyspnea.
- b. **Chronic exposure:** Bronchial irritation with chronic cough may occur. CKD can contain crystalline silica in the respirable size range of particulate. Chronic long term exposure to respirable crystalline silica without the use of a respirator can cause silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. NTP and IARC list respirable crystalline silica as a carcinogen; OSHA and ACGIH do not.

2. Skin contact:

- a. **Acute exposure:** Freshly generated CKD may be corrosive in contact with unprotected skin, due to the content of calcium oxide and calcium hydroxide (lime). Solutions of lime can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.

Section V - Health Hazard Data - (Continued)

- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of CKD remains (approximately 15-20 minutes). In the case of chemical burns, due to the lime content of CKD, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. **Eye contact: Freshly generated CKD may be corrosive to moist tissue around the eyes**
 - a. **Acute exposure:** Direct contact with the freshly generated solid or aqueous solutions may cause conjunctival edema and/or corneal damage; can lead to and cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of CKD remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. **Ingestion:** corrosive. If ingested, consult a physician immediately. Do not induce vomiting.

Hazard Information About Trace Metals in CKD:

Arsenic – Routes of entry: inhalation, absorption, skin and/or eye contact, ingestion. Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuritis, respiratory system irritation; hyperpigmentation of skin. Target organs are liver, kidneys, skin, lungs and lymphatic system. Arsenic is associated with lung and lymphatic cancer.

Chromium – Routes of entry: inhalation, ingestion, skin and/or eye contact. Chromium compounds are associated with eye irritation, allergic contact dermatitis and in some cases lung fibrosis. Target organs are the eyes, skin, and respiratory system.

Cadmium – Routes of entry: inhalation and ingestion. Cadmium dust may cause pulmonary edema and shortness of breath. Can result in cough, chest tightness, substernal pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, loss of the sense of smell, emphysema, proteinuria and mild anemia. The target organs are the respiratory system, kidneys, prostate and blood. Cadmium is associated with prostatic and lung cancer.

Lead – Routes of entry: inhalation, ingestion, skin and/or eye contact. Lead is associated with weakness, fatigue, insomnia, facial pallor, anorexia, low weight, constipation, abdominal pain, anemia, lead line on gums, tremors, wrist paralysis, brain alterations, kidney disease, eye irritation and hypotension. The target organs are the GI tract, CNS, kidneys, blood and gingival tissue.

Antimony – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes irritation of eyes, skin, nose, throat and mouth; dizziness; headache; nausea; vomiting; diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly. The target organs are the eyes, skin, respiratory system and CVS.

Barium – Routes of entry: inhalation, ingestion. Barium compounds can cause severe eye burns and skin irritation. It can cause muscle stimulation followed by paralysis with symptoms including nausea, vomiting, colic and diarrhea. Target organs are the skin, eyes and muscle system.

Beryllium – Routes of entry: inhalation and skin and/or eye contact. Chronic exposure causes berylliosis: anorexia, low weight, weakness, chest pain, cough, clubbing of fingers, cyanosis, and pulmonary insufficiency; also causes eye irritation and dermatitis. The target organs are the eyes, respiratory system, and skin. Beryllium is associated with lung cancer.

Silver – Routes of entry: inhalation, ingestion, skin and/or eye contact. Can cause blue-gray discoloration of skin, eyes and mucous membranes; may cause irritation and ulceration of skin and GI tract disturbances. Target organs are nasal septum, skin and eyes.

Mercury – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes skin and eye irritation; cough, chest pain, shortness of breath, bronchial pneumonitis; tremors, insomnia, irritability, indecision, headache, fatigue, weakness, inflammation of the mouth, salivation, GI tract disturbances, anorexia, weight loss and protein in the urine.

Thallium – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes nausea and vomiting, diarrhea and abdominal pain; eyelid drooping, loss of binocular vision, peripheral neuritis, tremors; retrosternal tightness, chest pain, pulmonary edema; seizures, involuntary body movements, psychosis; liver and kidney damage; hair loss, tingling in the legs. Target organs are eyes, respiratory system, CNS, liver, kidneys, GI tract, body hair.

Selenium – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes eye, skin, nose and throat irritation; visual disturbances; headache; chills, fever; shortness of breath, bronchitis; metallic taste, garlic breath, GI tract disturbances; dermatitis; eye and skin burns. In animals causes: anemia; liver necrosis and cirrhosis; kidney and spleen damage. Target organs are the eyes, skin, respiratory system, liver, kidneys, blood, spleen.

Nickel – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes allergic dermatitis, allergic asthma, pneumonitis. Target organs are nasal cavities, lungs, skin. Nickel is associated with lung and nasal cancer.

Section VI - Reactivity Data

Stability: Calcium oxide and calcium hydroxide, if present in CKD, will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate. Cement kiln dust consolidates when mixed with water. The resulting dry material sets loosely, preventing the material from becoming airborne. With excess water, calcium oxide and calcium hydroxide which may be present in freshly generated CKD can form a corrosive solution, pH 12-12.5.

Incompatibility (Materials to avoid): Contact with mineral acids will cause evolution of carbon dioxide with production of heat.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Handling, conveying, or releasing CKD as a dry dusty solid. Wetting CKD prior to all handling will prevent the substance from becoming airborne.

Section VII - Precautions for Safe Handling and Use

Handling: Use protective equipment as described in Section VIII.

Storing: CKD should be wet by water spray when discharging from ESP bins to avoid generation of dust when conveying and depositing in landfill. No other precautions needed.

Section VIII - Control Measures

Respiratory Protection: A NIOSH approved respirator must be used to control exposure below PELs and TLVs. Respirator must be effective in preventing exposure to respirable particulate composed of crystalline silica, lime and heavy metals at trace concentrations.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with cement kiln dust, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet for AB3 Limestone

Section I - Identity

Manufacturer's name and address: Shamrock Aggregates
23004 E. 24 Highway
Independence, MO 64050

Emergency Telephone Number: (816) 792-1628
Information Telephone Number: (816) 329-8993

Substance: AB3 Limestone, Calcium Carbonate, Calcite, CaCO_3 , Limestone, Lime Rock, Road Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: CaCO_3

Revision Date: April, 1998

Section II - Hazardous Ingredients

	<u>CAS #</u>	<u>%</u>	<u>OSHA PEL</u>	<u>1994-95 ACGIH TLV</u>
Calcium Carbonate (CaCO_3)	471-34-1	>1%	15 mg/m^3 total dust 5 mg/m^3 respirable dust	10 mg/m^3 **
Silica (quartz)	14808-60-7	>0.1%	<u>10 mg/m^3</u> % Silica* + 2	0.1 mg/m^3 *

* Respirable fraction

** For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain silica as an impurity.

Section III - Physical/Chemical Characteristics

Boiling Point: NA*
Vapor Pressure(mmHg): 0
Vapor Density: (Air=1) NA
Solubility in Water: 0.0014% (25°C)
Appearance and Odor: White powder or granules; No odor

Specific Gravity: 2.710
Melting Point: Decomposes 900°C.
Evaporation Rate: 0 (1652°F)

*NA = not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA*

Flammable Limits: NA **LEL:** NA **UEL:** NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

*NA = Not Applicable

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900 °C (1652 °F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Emergency measures not generally indicated.

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulate.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



10/98

Material Safety Data Sheet for Lawn Lime

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Lawn Lime

Chemical Family: Primarily a mixture of calcium carbonate and calcium hydroxide and many contain a minor amount of calcium oxide.

Revision Date: March, 1998

Section II - Hazardous Ingredients and Exposure Limits

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Calcium carbonate, CaCO_3	1317-65-3	Total dust, 15 mg/m^3 Respirable fraction, 5 mg/m^3 **	10 mg/m^3 *
Calcium hydroxide, Ca(OH)_2	1305-62-0	5 mg/m^3	5 mg/m^3
Calcium oxide, CaO	1305-78-8	5 mg/m^3	2 mg/m^3
*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica			
**Unless contains >1% crystalline silica (quartz)			

Lawn Lime can contain quartz >0.1%. The OSHA PEL for quartz is $\frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$ respirable dust only.

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m^3 .

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base
Specific Gravity:	Approximate range 2.3 to 2.60
Vapor Pressure(mm Hg):	0
Vapor Density:	(Air=1) Not Applicable
Evaporation Rate:	Not Applicable
Solubility in Water:	0.0014% (25 °C)
Appearance and Odor:	Soft white powder or granules; faint odor
Melting Point:	Calcium hydroxide-decomposes above 600 °C Calcium carbonate-decomposes above 900 °C

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Lawn Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Lawn Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Lawn Lime can contain quartz crystalline silica greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough is common. Chronic overexposure may result in silicosis.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact:** corrosive
 - a. **Acute exposure:** The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Lawn Lime listed as an OSHA Carcinogenic: NO **By NTP:** NO **By IARC:** NO

Quartz listed as an OSHA carcinogen: NO **By NTP:** YES (Group 2A) **By IARC:** YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: Use a NIOSH approved (42 CFR 84) respirator with dust filtering capability for protection against airborne lawn lime.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

**Thermal Ceramics****MATERIAL SAFETY DATA SHEET**

4604

MSDS No: 151-2**Date Prepared:** 03/28/1995**Revised/Reviewed:** 06/01/1998**1. PRODUCT AND COMPANY IDENTIFICATION**

Material Name: Crystalline Silica Containing Product
Common Name: Insulating Firebrick and Firebrick
Intended Use: High Temperature Thermal Insulation
Trade Names: K-25HS, K-25XHS, K-26S, K-26SE, K-26HS, K-26LI, K-28, K-28S, K-30, K-30S, K-3000, K-3000S; Firebrick 80, 80D, 80DZ; IFB Dust

Manufacturer/Supplier: THERMAL CERAMICS INC.
P.O. BOX 923; DEPT. 300
AUGUSTA, GA 30903-0923
Product Stewardship Program: 800-722-5681 / FAX: 706-560-4053
For additional MSDS's, call our automated FAXBACK: 800-329-7444

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT</u> <u>CAS NUMBER</u>	<u>PERCENT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Crystalline silica - quartz 14808-60-7	Up to 0.3	0.1 mg/m ³ (respirable)	0.1 mg/m ³ (respirable)
Crystalline silica - cristobalite 14464-46-1	0.5 - 21	0.05 mg/m ³ (respirable)	0.05 mg/m ³ (respirable)
Ferric oxide 1309-37-1	0.3 - 1.5	10 mg/m ³	5 mg/m ³
Titanium dioxide 13463-67-7	1.0 - 2.0	15 mg/m ³	10 mg/m ³
Calcium oxide 1305-78-8	0.1 - 1.0	5 mg/m ³	2 mg/m ³
Alumina 1344-28-1	40 - 70	15 mg/m ³ (total); 5 mg/m ³ (respirable)	10 mg/m ³
Silica, amorphous 7631-86-9	35 - 60	(80 mg/m ³ + % SiO ₂ **) or 20 mppcf	10 mg/m ³

NOTES:** % SiO₂ = percent of crystalline silica

(See Section 8 for Personal Protection Guidelines.)

MATERIAL SAFETY DATA SHEET

MSDS No: 151-2

Date Prepared: 03/28/1995

Revised/Reviewed: 06/01/1998

PRODUCT SAFETY INFORMATION

CRYSTALLINE SILICA CONTAINING PRODUCT (Quartz CAS #14808-60-7 And/Or Cristobalite CAS #14464-46-1)

WARNING:

- This product contains crystalline silica, which has been identified by the International Agency for Research on Cancer (IARC) as a known carcinogen to humans.
- This product contains crystalline silica, a chemical known to the State of California to cause cancer.

Avoid breathing particulates and dust

RISKS:

- Cancer hazard by inhalation.
- May cause silicosis (lung disease) by inhalation.
- May cause temporary irritation to eyes, skin and respiratory tract.

PRECAUTIONARY MEASURES:

- Minimize airborne particulates and dust with engineering controls.
- Wear a NIOSH certified respirator.
- Wear long sleeved, loose-fitting clothing, eye protection, and gloves.
- Wash work clothing separately and rinse washing machine after use.

FIRST AID MEASURES:

- Eyes:** Flush with Water.
- Skin:** Wash with soap and warm water.
- Ingestion:** Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.
- Inhalation:** Remove to fresh clean air.

If any of the above irritations persists, seek medical attention immediately.

FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES, REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS).

THERMAL CERAMICS INC.
P.O. BOX 923 DEPT. 300
AUGUSTA, GA 30903-0923
(800) 722-5681



Canadian WHMIS Class D-2A: Material causing other toxic effects.

Label No: 2-0895 (Rev. 05/98)

MATERIAL SAFETY DATA SHEET 4004

MSDS No: 151-2	Date Prepared: 03/28/1995	Revised/Reviewed: 06/01/1998
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...Section 302:	Extremely Hazardous Substances
...Section 304:	Emergency Release
...Section 311:	MSDS/List of Chemicals
...Section 312:	Emergency and Hazardous Inventory
...Section 313:	Toxic Chemicals Release Reporting
STEL:	Short-Term Exposure Limit
TCLP:	Toxicity Characteristics Leaching Procedures (EPA)
TLV:	Threshold Limit Values (ACGIH)
TSCA:	Toxic Substance Control Act
WHMIS:	Workplace Hazardous Materials Information System (Canada)
29 CFR 1910.134 & 1926.103:	OSHA Respiratory Protection Standard
29 CFR 1910.1200 & 1926.59:	OSHA Hazard Communications Standard

Revisions: Replaces revision 03/23/98. Revised Respiratory Protection in Section 8 with updated information.

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.

MATERIAL SAFETY DATA SHEET 4004**MSDS No:** 151-2 **Date Prepared:** 03/28/1995 **Revised/Reviewed:** 06/01/1998**California:**

Listed as "Silica, crystalline (airborne particles of respirable size)" Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986: Known to the State of California to cause cancer.

Other States:

Crystalline silica products are not known to be regulated by states other than California; however, state and local OSHA and EPA regulations may apply to these products. Contact your local agency if in doubt.

International Regulations**Canadian WHMIS:**

Class D-2A Materials Causing Other Toxic Effects

Canadian EPA:

All substances in this product are listed, as required, on the Domestic Substance List (DSL).

16. OTHER INFORMATION**Precautionary Measures to be Taken After Service and Upon Removal:**

Amorphous silica may transform to crystalline silica when subjected to temperatures exceeding 1800° F. Therefore, the content of crystalline silica may be higher than originally stated in Section 2. Users should observe good industrial hygiene and work practices to reduce employees' exposure when handling after service products.

HMIS Hazard Rating:

HMIS Acute Health: 1*

HMIS Flammable: 0

HMIS Reactivity: 0

HMIS Personal Protective: To be supplied by user depending upon use

See Section 3 of the MSDS for possible chronic health effects.

SARA Title III Hazard Categories:

Acute Health: Yes
Chronic Health: Yes
Fire Hazard: No

Pressure Hazard: No
Reactivity Hazard: No

Definitions:

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service Registry Number
EPA: Environmental Protection Agency
f/cc: Fibers per cubic centimeter
HEPA: High Efficiency Particulate Air
HMIS: Hazardous Materials Identification System
mg/m3: Milligrams per cubic meter of air
mppcf: Million particles per cubic meter
MSHA: Mine Safety and Health Administration
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety and Health Administration
RCRA: Resource Conservation and Recovery Act
SARA: Superfund Amendments and Reauthorization Act
Title III: Emergency Planning and Community Right to Know Act

MATERIAL SAFETY DATA SHEET

4004

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

cristobalite is carcinogenic to humans (Group 1) [IARC Monograph; Vol. 68; June 1997]. However, in reaching its conclusion, IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g., cigarette smoking) or distribution of its polymorphs.

Toxicology:

- Crystalline silica

There is sufficient evidence of carcinogenicity of respirable silica in experimental animals (IARC Monograph; Vol. 42; 1987 and IARC Monograph; Vol. 68; 1997). Inhalation and intratracheal installation of crystalline silica in rats caused lung cancer; however, studies in other species such as mice and hamsters caused no lung cancer. Crystalline silica also caused fibrosis in rats and hamsters in several inhalation and intratracheal installation studies

12. ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

13. DISPOSAL INFORMATION

Waste Management:

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

14. TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard Class: Not regulated
Labels: Not applicable
Placards: Not applicable
Bill of Lading: Product name

United Nations (UN) Number: Not applicable
North America (NA) Number: Not applicable

15. REGULATORY INFORMATION

United States Regulations

SARA Title III:

This product does not contain any substances reportable under Sections 302, 304, 313 (40 CFR 372). Sections 311 and 312 apply.

OSHA:

Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication Standard.

TSCA:

All substances contained in this product are listed in the TSCA Chemical Inventory [Section 8(b)].

MATERIAL SAFETY DATA SHEET

4004

MSDS No: 151-2

Date Prepared: 03/28/1995

Revised/Reviewed: 06/01/1998

Recommended Respiratory Protection When Handling Crystalline Silica Products

AS PRODUCED AND AFTER SERVICE

CONCENTRATION

RESPIRATOR

to PEL	Disposable particulate respirator (N, R, or P, 95 rated) or half mask air purifying respirator with high efficiency (P100) filter cartridges.
1 to 10 times PEL	Half-mask, air-purifying respirator with high efficiency particulate air (HEPA) or P100 rated filter cartridges.
10 to 50 times PEL	Full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges or powered air-purifying respirator (PAPR) with HEPA or P100 rated filter cartridges.
50 times PEL	Full facepiece positive pressure supplied air respirator.

NOTE: For unknown exposures or when working with other contaminants, consult an industrial hygienist for air monitoring and respirator selection.

Protective Clothing: Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Eye Protection: Goggles/safety glasses with sideshields should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid brick or block	Vapor Density:	Not applicable
Chemical Family:	Aluminosilicates	Specific Gravity Range:	0.77 - 2.4
Vapor Pressure:	Not applicable	Volatile by Volume (%):	Not applicable
Boiling Point:	Not applicable	pH:	Not applicable
Melting Point:	3190°F to 3350°F		
Water Solubility (%):	Not soluble in water		

10. STABILITY AND REACTIVITY

Hazardous Polymerization: Will not occur

Chemical Incompatibilities: Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide

Hazardous Decomposition Products: None

11. TOXICOLOGICAL INFORMATION

Epidemiology: - Crystalline silica
Results of several epidemiology studies have indicated that diseases which may be caused by the uncontrolled inhalation of crystalline silica include silicosis, pulmonary tuberculosis or industrial bronchitis. In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystalline silica from occupational sources inhaled in the form of quartz or

MATERIAL SAFETY DATA SHEET

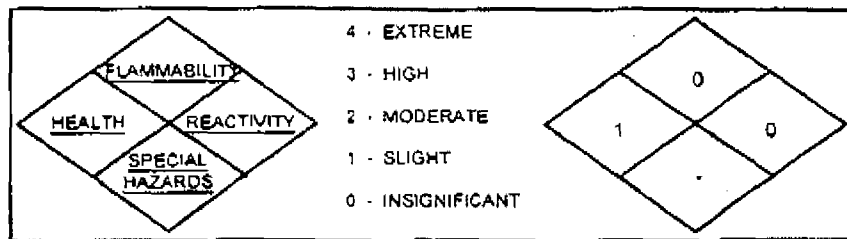
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Revised/Reviewed: 06/01/1998

5. FIRE FIGHTING MEASURES



NFPA Unusual Hazards:

None

Flash Point:

Non-combustible

Extinguishing Media:

Use extinguishing media appropriate to the surrounding fire.

Explosion Hazards:

None

Protective Equipment:

Wear NIOSH approved respirator together with other protective gear appropriate to the surrounding fire.

6. ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures:

Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

7. HANDLING AND STORAGE

Handling:

Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

Storage:

This product is stable under all conditions of storage. Store in original factory container in a dry area. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use engineering controls such as ventilation and dust collection devices to reduce airborne particulate concentrations to the lowest attainable level.

Respiratory Protection:

When it is not possible or feasible to reduce airborne crystalline silica or particulate levels below the PEL through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne crystalline silica and/or dust concentrations using appropriate NIOSH analytical methods and select the respiratory protection based upon the results of that monitoring. 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH certified respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

MATERIAL SAFETY DATA SHEET

4004

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

** WARNING **

• Cancer hazard by inhalation. [SEE BELOW]

• Dust from this product may aggravate existing chronic lung conditions such as bronchitis, emphysema and asthma.

Possible Health Effects

Target Organs: Eyes, skin, and respiratory system.
 Primary Entry Route: Inhalation
 Acute effects: Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to the skin on prolonged contact.
 Chronic effects: Prolonged/repeated inhalation of respirable crystalline silica may cause delayed lung injury (silicosis). [See Section 11 of this MSDS for more information.]

Hazard Classification:

The Seventh Annual Report on Carcinogens (1994), prepared by the National Toxicology Program (NTP), classified silica, crystalline (respirable size), as a substance which may reasonably be anticipated to be a carcinogen.

The International Agency for Research on Cancer (IARC) has classified crystalline silica inhaled in the form of quartz or cristobalite from occupational sources as carcinogenic to humans (Group 1). This IARC Classification was based on a relatively large number of epidemiological studies that together provide sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica.

The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "silica, crystalline (airborne particles of respirable size)" as a material known to the State of California to cause cancer.

Signs and Symptoms of Overexposure:

Eye Contact: Physical irritation, laceration.
 Skin Contact: Physical irritation.
 Ingestion: May cause temporary irritation to the gastrointestinal tract.
 Inhalation: Decline in pulmonary function and abnormal chest x-ray.

4. FIRST AID MEASURES

Eye Contact: Flush with large amounts of water for at least 15 minutes. Do not rub eyes.
 Skin Contact: Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.
 Ingestion: Do not induce vomiting; drink plenty of water.
 Inhalation: Remove affected person to clean fresh air.
**** If any of the symptoms persist, seek medical attention immediately.**

K/h 3 January 1999



MATERIAL SAFETY DATA SHEET

HIPOROS, MOLER INSULATING BRICK

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

MANUFACTURER: Skamol a/s Skamol Insulation Østergade 58-60 DK-7900 Nykøbing Mors Denmark Telephone: 011 45 97 72 15 33	EMERGENCY TELEPHONE: United States: Phone: (716) 831-8682 Fax: (716) 831-8687 See Section 16 for address of U.S. contact
TRADE NAME: HIPOROS, Moler Insulating Brick CHEMICAL NAME: Mixture of natural and synthetic minerals and silicates	SYNONYMS: Moler insulating bricks
PREPARED BY: Clayton Environmental Consultants, Inc.	DATE OF ISSUE/REVISION: 9 August 1996

2. INGREDIENTS

<u>Component</u>	<u>CAS Number(s)</u>	<u>Percent</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>Units</u>
Natural and synthetic minerals and silicates	1317-80-8 68476-25-5 7778-18-9 14483-19-3	98.8	10*	15*	mg/m ³
Quartz	14808-60-7	3.2	0.1**	$\frac{10}{\% \text{Quartz} + 2}$ ***	mg/m ³
		* Total dust	** Respirable quartz	*** Respirable dust	

The ACGIH TLV and OSHA PEL listed for natural and synthetic minerals and silicates are the 1995-1996 TLV for "particulates, not otherwise classified" and the 1996 OSHA PEL for "particulates not otherwise regulated." The OSHA PEL for respirable quartz is calculated from the percentage of quartz in the respirable dust. The TLV and PELs listed are 8-hour time-weighted average exposure limits.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

The product is porous, pink bricks having no odor. Dusts may cause irritation of the eyes, skin, mucous membranes, and respiratory tract. The product contains small amounts of crystalline silica (quartz), which has been identified as a potential carcinogen. Use appropriate personal protective equipment. Keep unnecessary personnel out of the area when working with the product or during cleanups.

3. HAZARDS IDENTIFICATION (Continued)

POTENTIAL HEALTH EFFECTS:

Eye Contact: Dusts may cause irritation.

Skin Contact: Dusts may cause irritation.

Skin Absorption: Not known to be absorbed through intact skin.

Inhalation: Dusts may cause respiratory tract and mucous membrane irritation. Inhalation of quartz can cause lung damage (silicosis and possibly cancer).

Acute silicosis can result from extremely high exposures to crystalline silica dust, particularly when the particle sizes are small. Acute silicosis is rapidly progressive with diffuse pulmonary involvement rather than the localized, nodular involvement seen in classical silicosis. Acute silicosis may develop only months after the initial exposure, and has been reported to cause death in as little as 1 to 2 years.

Ingestion: Not expected to be an important route of entry into the body. Ingestion of large amounts of the product may cause irritation of the mouth, esophagus, and stomach.

CHRONIC AND CARCINOGENIC HEALTH EFFECTS:

Dusts generated in working with this product are slightly acidic. Prolonged contact with dusts from this product may cause dermatitis.

Chronic inhalation of quartz-containing dusts can cause lung disease, including simple silicosis, conglomerate silicosis or progressive massive fibrosis, chronic bronchitis and emphysema, and possible interaction with coexisting active or dormant tuberculosis. The intensity and duration of exposure to airborne quartz-containing dusts are major factors influencing the risk of developing lung disease.

IARC has determined that quartz is probably carcinogenic to humans, based on limited evidence in humans and sufficient evidence in experimental animals. NTP indicates that quartz is reasonably anticipated to be a carcinogen, also based on limited evidence in humans and sufficient evidence of carcinogenicity in experimental animals.

Pre-existing lung and skin conditions possibly may be aggravated by prolonged exposure to high concentrations of the product.

4. FIRST AID MEASURES

Inhalation: Remove exposed person to fresh air. If breathing is difficult, oxygen may be administered. If breathing has stopped, artificial respiration should be started immediately. Seek medical attention.

Eyes: Flush with tepid water for at least 20 minutes while holding the eyelids wide open. Seek medical attention if irritation develops.

Skin: Wash thoroughly with mild soap and water. Seek medical attention if irritation develops. Launder contaminated clothing before reuse.

4. FIRST AID MEASURES (Continued)

Ingestion: Not expected to be an important route of entry into the body. If large amounts of the product are ingested, seek medical attention.

5. FIRE FIGHTING MEASURES

FLASH POINT: None

LEL: None

UEL: None

AUTOIGNITION TEMPERATURE: None

Product will not burn in air. Use fire fighting methods suitable for other materials present in the surrounding fire.

A self-contained breathing apparatus operating in positive pressure mode and full fire fighting gear should be worn for combating fires.

6. ACCIDENTAL RELEASE MEASURES

Pick up released product using appropriate implements and place in original containers if reusable. If not reusable, place in appropriate containers for disposal. Appropriate personal protective equipment cited in Section 8 should be worn during cleanup operations. Although the product itself is not hazardous to the environment, material collected during cleanup may be contaminated with hazardous materials. If there is a potential for contamination, material collected during cleanup should be treated as hazardous until specific testing, including TCLP, shows the material to be non-hazardous.

7. HANDLING AND STORAGE

Wear appropriate protective equipment cited in Section 8 during handling. Good housekeeping practices should be employed to prevent generation and accumulation of dusts.

After handling product, wash face and hands before eating, drinking, or smoking.

8. EXPOSURE CONTROL - PERSONAL PROTECTION

ENGINEERING CONTROLS: Local exhaust ventilation should be provided as needed to maintain exposures below the limits cited in Section 2. Design details for local exhaust ventilation systems can be found in the most recent edition of *Industrial Ventilation - A Manual of Recommended Practice*, published by the American Conference of Governmental Industrial Hygienists, P.O. Box 18153, Lansing, MI 48910. The need for local exhaust ventilation should be evaluated by a professional industrial hygienist. Local exhaust systems should be designed by a professional engineer.

RESPIRATORY PROTECTION: If exposures may exceed the limits cited in Section 2, use, as a minimum, a NIOSH-approved half-facepiece respirator with cartridges approved for particulates having an exposure limit of not less than 0.05 mg/m³. If exposures may exceed 10 times the limits cited in Section 2, consult respiratory protective equipment suppliers or a professional industrial hygienist for assistance in selection of proper respiratory protective equipment. The evaluation of a need for respiratory protective equipment should be made by a professional industrial hygienist. Employees who use respiratory

8. EXPOSURE CONTROL - PERSONAL PROTECTION (Continued)

RESPIRATORY PROTECTION (Continued):

protection must be included in a respiratory protection program that conforms to the requirements of OSHA standards or corresponding state laws and regulations.

EYE PROTECTION: Safety glasses with side shields should be worn when working with this product. Goggles should be worn while the product is being sawed or ground. Do not wear contact lenses when working with this product.

SKIN PROTECTION: Use of protective gloves is recommended to prevent possible irritation while working with this material. Leather gloves or polymeric materials such as polyvinyl chloride are suggested to minimize contact with dust from the product. A polymer-coated apron is recommended where there is a possibility that work clothing may become heavily contaminated with dust from working with this product. Soiled work clothing and personal protective equipment should be thoroughly cleaned before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND PHYSICAL

STATE: Pink, porous solid

MELTING POINT: 2,480 to 2,550°F
1,350 to 1,400°C

VAPOR DENSITY (AIR=1): Not applicable

OCTANOL/WATER PARTITION
COEFFICIENT: Not applicable

VAPOR PRESSURE: Not applicable

EVAPORATION RATE: Not applicable

ODOR: None

SPECIFIC GRAVITY/BULK

DENSITY: Bulk density 35 lbs/cu.ft. (570 kg/m³)

% VOLATILES BY VOLUME: Not volatile

BOILING POINT: Not determined

% SOLUBILITY IN WATER: Insoluble

pH: (In mixture with water) 8.0

10. STABILITY AND REACTIVITY

STABILITY (CONDITIONS TO AVOID): None known

INCOMPATIBILITIES: No known chemical incompatibilities.

HAZARDOUS DECOMPOSITION PRODUCTS: None known. Product is stable at service temperatures up to 1,650°F (900°C).

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Quartz has been shown to cause lung cancer in test animals. In rats, chronic inhalation and tracheal instillation studies have indicated significant increases in incidences of adenocarcinomas and squamous cell carcinomas of the lung. Human evidence is less clear, because of the presence of potentially confounding factors (such as smoking or concomitant exposure to carcinogenic metals and organic compounds) in the majority of epidemiological studies.

The International Agency for Research on Cancer (IARC) in *Monograph 42, Silica and Some Silicates*, 39-143 (1987) cites a number of epidemiological studies that indicate an increased risk of developing lung cancer among workers who are exposed to respirable crystalline silica. The majority of the cited studies did

11. TOXICOLOGICAL INFORMATION (Continued)

not take into account confounding factors such as smoking and other chemical exposures.

The IARC cites animal studies in which inhalation of respirable crystalline silica or intratracheal instillation produced adenocarcinomas and squamous-cell carcinomas in rats. A similar response was not elicited from hamsters.

Similar evidence for the carcinogenicity of respirable crystalline silica is cited by the National Toxicology Program (NTP) in its *Sixth Annual Report on Carcinogens, 1991 Summary*.

12. ECOLOGICAL INFORMATION

Detailed studies on the environmental fate of the product have not been conducted. However, it is not expected that the product would present a hazard to aquatic and terrestrial flora and fauna.

13. DISPOSAL CONSIDERATIONS

This product is not classified as a hazardous waste under current EPA regulations. Disposal at an EPA-approved landfill is recommended. If product may be contaminated with other materials, testing, including TCLP, should be performed to determine the hazard characteristics. It is the user's responsibility to dispose of all wastes in accordance with local, state, and federal regulations.

Empty containers may have residues from the product. Observe proper safety and handling precautions for product containers.

14. TRANSPORTATION INFORMATION

DOT Classification: Not regulated

15. REGULATORY INFORMATION

Quartz is listed in the State of Massachusetts as an Extraordinarily Hazardous Substance and carcinogen, when present in dust-producing material, but is exempt if particulates are not present and cannot be substantially generated through use of the product. Crystalline silica whose particle size is in the respirable range has been listed by the State of California as a compound known to cause cancer.

The product is not regulated under SARA Title III, Section 313. It may be reportable under SARA Title III, Sections 311 and 312.

OSHA Hazard Communication Categories: Irritant, Skin Hazard, Lung Hazard, Carcinogen

SARA Hazard Categories: Acute hazard, Chronic Hazard

TSCA Status: All known constituents except the following are listed in the TSCA Inventory of Chemical Substances:

Diopside (CAS No. 14483-19-3) is present in trace amounts.

15. REGULATORY INFORMATION (Continued)

WHMIS Classification: Not a controlled product under current WHMIS regulations. As a manufactured article, this product currently is exempt.

16. OTHER INFORMATION

U.S. CONTACT: Skamol, Inc.
6010 North Bailey, Suite 1
Amherst, NY 14226
Tel: (716) 831-8682
Fax: (716) 831-8687

IMPORTANT SAFETY NOTICE: The information in the Material Safety Data Sheet relates only to the specific material described herein and does not relate to use in combination with any other material or substance or in any process. We believe that the information contained herein is current as of the date of issue of this Material Safety Data Sheet. Because the use of this information and the conditions of use of this product are not within the control of Skamol a/s and Skamol, Inc., it is the user's obligation to determine the conditions of safe use of this product.

Users of this product should study this Material Safety Data Sheet and become aware of the product hazards and safety information before using the product. Users should also notify their employees, agents, and contractors regarding information contained in this Material Safety Data Sheet and any product hazards and safety information in order to provide for safe use of this product.



Manufacturer: Skamol a/s · Østergade 58-60 · DK-7800 Nykøbing Mors · Tel. +45 97 72 15 33 · Fax +45 97 72 49 75 · e-mail: insulation@skamol.dk
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Skamol a/s is certified under ISO 9001

9/21/92 MATERIAL SAFETY DATA SHEET

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO. 65265
TELEPHONE NUMBER --- 314-473-3626

SECTION I

<u>PRODUCT NAME:</u>		INSWOOL BLANKET	INSWOOL-M BLANKET*	INSWOOL-HP BULK
		INSWOOL-HP BLANKET	INSWOOL-HP-M BLANKET*	INSWOOL-HP-M BULK*
		INSWOOL-HT BLANKET	INSWOOL-HT-M BLANKET*	INSWOOL-HT BULK
		INSWOOL-LT BLANKET	INSWOOL BULK	INSWOOL-HT-M BULK*
		INSWOOL-LT-M BLANKET*	INSWOOL-M BULK*	INSWOOL-LT BULK
				INSWOOL-LT-M BULK*
<u>PRODUCT TYPE:</u>		Refractory Fiber		<u>FORMULA:</u>
<u>CHEMICAL FAMILY:</u>		Refractory		Not Applicable
		<u>NFPA RATING:</u>	1-0-0	
* Made in the Republic of Mexico.		<u>DOT NO:</u>	Not Regulated	

SECTION II
PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Refractory Fiber (Al ₂ O ₃ - SiO ₂ Glass) 100%	2 fibers/cc*	142844-00-6

* A. P. Green workplace exposure guideline. See also Section IX.

Note: International Agency for Research on Cancer (IARC) has classified ceramic fiber as 2B - Possibly carcinogenic to humans.

SECTION III
PHYSICAL DATA

<u>SOLUBILITY IN WATER:</u>	Nil	<u>VOLATILES BY VOLUME (%):</u>	Nil
<u>SPECIFIC GRAVITY:</u>	2.5-3.0	<u>MELTING POINT:</u>	Not Applicable
<u>APPEARANCE AND ODOR:</u>	White to off-white fiber, no odor, in blanket or bulk form.		

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None

EXTINGUISHING MEDIA: Not combustible.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SECTION V

HEALTH HAZARD DATA

EFFECT OF OVEREXPOSURE:

EYES: ACUTE: Causes mechanical irritation.
CHRONIC: None Known.

SKIN: ACUTE: May cause skin irritation.
CHRONIC: None Known.

INHALATION: ACUTE: May cause upper respiratory irritation.
CHRONIC: May cause lung damage. There have been animal studies that have shown refractory fiber to cause cancer of the pleura in animals.

INGESTION: ACUTE: Unknown.
CHRONIC: Unknown.

EMERGENCY AND FIRST AID PROCEDURES:

EYES: Immediately flush eyes with water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash skin with water followed with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by a physician.

SECTION VI
REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY: Hydrofluoric acid and strong alkalis.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION VII
SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Dampen, then scoop up and place in a container for disposal.

WASTE DISPOSAL METHOD: To landfill, in accordance with local, state and federal regulations.

SECTION VIII
SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: A NIOSH approved respirator for mineral dusts should be used at all times when working with this product. If material has been exposed to elevated temperatures above (1800°F (982°C)), a NIOSH approved respirator for use with crystalline silica should be used. (See Section IX.) Employees using a respirator must be fit tested, using OSHA qualitative fit testing requirements.

VENTILATION: General mechanical ventilation is usually adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn. Contact lenses should not be worn while handling this material.

OTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from skin contact. Work clothing should be washed separately. Rinse washing machine thoroughly after use.

SECTION IX
SPECIAL PRECAUTIONS

WARNING: This product as supplied does not contain cristobalite; however, avoid breathing refractory dust during tear-out of this refractory after it has been in service. When exposed to temperatures above 1800°F (982°C), a large percentage of this material turns to cristobalite. A NIOSH approved respirator for use with crystalline silica should be used. See the NIOSH Certified Equipment list for the correct type for the dust level you encounter.

The permissible exposure limits for cristobalite, CAS #14464-46-1, are:

ACGIH	OSHA
TLV-TWA	PEL
0.05 mg/m ³	5 mg/m ³
Respirable Dust	SiO ₂ + 2 Respirable

(Note: OSHA has proposed a new PEL of 0.05 mg/m³ respirable dust, the same as ACGIH.)

WARNING: Cristobalite is crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Its study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

WARNING: Employees should not be allowed to smoke in any area where ceramic fibers are being installed or removed. During removal or repair, the material being removed or the area repaired should be sprayed with water--preferably water containing a wetting agent (detergent)--to suppress dusting. Dust collection apparatus should be used.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Title: Senior Technical Consultant
Phone: (314) 473-3392

Kib 3 January 1999

MATERIAL SAFETY DATA SHEET



HARBISON-WALKER REFRACTORIES
Division of Dresser Industries, Inc.
2 Gateway Center, Pittsburgh, Pennsylvania 15222

WARNING LABEL: SILICA

TELEPHONE: (412) 562-6200
TELETYPE: 710-664-4347

03/19/85

DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION

Product Tradename:

KALA

Type of Refractory:

High Alumina Brick

*For chrome containing refractories, indicate approximate percentage _____, and check applicable block.

- ☐ Contains chrome ore consisting predominantly of the mineral chromite (MgFe).O.(AlFeCr)₂O₃
☐ Contains chromium III oxide

SECTION II - HAZARDOUS INGREDIENTS

SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV®	NIOSH CRITERIA DOCUMENT NO.
<input type="checkbox"/> Quartz	SiO ₂	001317799	3 - 5%	10 mg/m ³ % Respirable Quartz +2	SAME	75-120
<input checked="" type="checkbox"/> Cristobalite	SiO ₂	14464-46-1		½ Quartz Value	SAME	75-120
<input type="checkbox"/> Tridymite	SiO ₂	15468-32-3		½ Quartz Value	SAME	75-120
<input type="checkbox"/> Fused Silica	SiO ₂	007631869		NONE	Use Quartz TLV	75-120
<input type="checkbox"/> Coal Tar Products	N/A	MX8001589		0.2 mg/m ³	SAME	78-107
<input type="checkbox"/> Petroleum Pitch	N/A	MX8052424		NONE	5.0 mg/m ³	78-106
<input type="checkbox"/> Phosphoric Acid	H ₃ PO ₄	007664382		1.0 mg/m ³ (mist)	SAME	NONE
<input type="checkbox"/> Lime	CaO	001305788		5.0 mg/m ³	2.0 mg/m ³	NONE
<input type="checkbox"/> Sodium Silicate	03-Si .2Na	006834920		NONE	NONE	NONE
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

SECTION III - PHYSICAL DATA

Appearance and Odor: Dark buff color; no odor.

Specific Gravity: 2.43

pH: ND

Solubility in Water: Insoluble.

Soluble Constituents:
Other:

SECTION IV - FIRE AND EXPLOSION DATA

UNLESS OTHERWISE NOTED, NONE. Product is a refractory.

NOTES:

SECTION V - HEALTH HAZARD DATA*

*SEE CHECKED BLOCKS		EXPOSURE REQUIRED	
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM
<input checked="" type="checkbox"/> Free Crystalline Silica	Delayed lung fibrosis - silicosis	✓	
<input type="checkbox"/> Coal Tar Products	Skin, lung, mucous membrane carcinogen	✓	
	Skin irritation; photosensitization		✓
<input type="checkbox"/> Petroleum Pitch	(Same as Coal Tar Products)		
<input type="checkbox"/> Lime	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/> Phosphoric Acid	Primary irritant - skin, eyes, etc.		✓
<input type="checkbox"/> Sodium Silicate	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/>			
<input type="checkbox"/>			

EMERGENCY OR FIRST AID PROCEDURES:

- ☐ Irritants: Wash from skin or flush from eyes using copious amounts of water.
- ☐ Coal Tar Products: Remove from skin by washing with soap and water. DO NOT use solvents. Same for petroleum pitch.
- ☐ Other:

SECTION VI - REACTIVITY DATA

STABILITY: <input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE Incompatibility (materials to avoid) Hazardous decomposition products: Hazardous Polymerization: <input type="checkbox"/> may occur <input checked="" type="checkbox"/> will not occur	COMMENTS:
--	-----------

SECTION VII - SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

COMMENTS:

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (CHECK TYPE): ☒ Approved Dust ☐ Other (Specify):
VENTILATION: Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits
PROTECTIVE GLOVES (CHECK TYPE): ☐ Acid Resistant ☐ Impermeable ☒ Abrasion Resistant ☐ Other (Specify):
EYE PROTECTION: Approved safety glasses, goggles or faceshields should be used when handling refractory products.
FOOT PROTECTION (CHECK TYPE): ☒ Metatarsal safety ☐ Impermeable
PROTECTIVE CLOTHING (SPECIFY):

SECTION IX - SPECIAL PRECAUTIONS

- ☐ If block is checked, product contains coal tar products. Workers should not be exposed to furnace "burn-in" volatiles.
- ☐ Other (Specify):

MATERIAL SAFETY DATA SHEET



DRESSER

Kiln 3 January 1999
HARBISON-WALKER REFRACTORIES
Dresser Industries, Inc.
One Gateway Center, Pittsburgh, Pennsylvania 15222

TELEPHONE: 412-662-6200

DISCLAIMER

11-21-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION

Product Tradename:

H-W LIGHTWEIGHT ES REFRACTORY

Type of Refractory:

Insulating Castable

SECTION II - HAZARDOUS INGREDIENTS

SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV ®	NIOSH CRITERIA DOCUMENT NO.
<input checked="" type="checkbox"/> Quartz	SiO ₂	14808-607	2 - 5	10 mg/m ³	0.1 mg/m ³	75-120
<input checked="" type="checkbox"/> Cristobalite	SiO ₂	14464-46-1	2 - 5	% Respirable Quartz +2	0.05 mg/m ³	75-120
<input type="checkbox"/> Tridymite	SiO ₂	15468-32-3		½ Quartz Value	0.05 mg/m ³	75-120
<input type="checkbox"/> Fused Silica	SiO ₂	60676-86-0		½ Quartz Value	0.05 mg/m ³	75-120
<input type="checkbox"/> Coal Tar Products	N/A	65996-93-2		20 mppcf	Use Quartz TLV	75-120
<input type="checkbox"/> Petroleum Pitch	N/A	8052-42-4		0.2mg/m ³	0.2 mg/m ³	78-107
<input type="checkbox"/> Phosphoric Acid*	H ₃ PO ₄	7664-38-2		NONE	0.2 mg/m ³	78-106
<input type="checkbox"/> Magnesia	MgO	1309-48-4		1.0 mg/m ³ (mist)	1.0 mg/m ³	NONE
<input type="checkbox"/> Free Alumina*	Al ₂ O ₃	1344-28-1		10 mg/m ³	10 mg/m ³	NONE
<input checked="" type="checkbox"/> Lime	CaO	1305-78-8	6 - 7	10 mg/m ³	10 mg/m ³	NONE
<input type="checkbox"/> Chrome III Oxide*	Cr ₂ O ₃	1308-38-9		5.0 mg/m ³	2.0 mg/m ³	NONE
<input type="checkbox"/>				1.0 mg/m ³	0.5mg/m ³	NONE
<input type="checkbox"/>						
<input type="checkbox"/>						

* Subject to reporting under Section 313, Sara Title III

SECTION III - PHYSICAL DATA

Appearance and Odor: Tan to gray color; earthy odor

FORM:

Specific Gravity: 1.20

pH: ND

— Brick

Solubility in Water: Slight Calcium Aluminate Cement

☒ Granular

Other:

— Paste

SECTION IV - FIRE AND EXPLOSION DATA

UNLESS OTHERWISE NOTED, NONE Product is a refractory, and will not burn.

NOTES:

SECTION V - HEALTH HAZARD DATA*			
*SEE CHECKED BLOCKS		EXPOSURE REQUIRED	
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM
<input checked="" type="checkbox"/> Free Crystalline Silica	Delayed lung fibrosis - silicosis	✓	
<input type="checkbox"/> Coal Tar Products	Skin, lung mucous membrane carcinogen	✓	
	Skin irritation; photosensitization		✓
<input type="checkbox"/> Petroleum Pitch	(Same as Coal Tar Products)	✓	✓
<input type="checkbox"/> Magnesia	Irritant to skin, eyes, mucous membranes, etc.		✓
<input checked="" type="checkbox"/> Lime	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/> Free Alumina	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/> Fused Silica	Delayed lung fibrosis-silicosis	✓	
<input type="checkbox"/> Phosphoric Acid	Primary Irritant - skin, eyes, etc.		✓
<input type="checkbox"/> Chrome III Oxide	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/>			
<input type="checkbox"/>			

EMERGENCY OR FIRST AID PROCEDURES:

☒ Irritants: Wash from skin or flush from eyes using copious amounts of water.

☐ Coal Tar Products: Remove from skin by washing with soap and water. DO NOT use solvents. Same for Petroleum Pitch.

☐ Other:

SECTION VI - REACTIVITY DATA	
STABILITY: <input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE Hazardous decomposition products: Hazardous Polymerization: <input type="checkbox"/> may occur <input checked="" type="checkbox"/> will not occur	COMMENTS: Incompatibility (material to avoid) Store in dry location prior to use

SECTION VII - SPILL AND LEAK PROCEDURES
Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.
COMMENTS:

SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (CHECK ONE): <input checked="" type="checkbox"/> Approved Dust <input type="checkbox"/> Other (Specify): VENTILATION: Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits PROTECTIVE GLOVES (CHECK TYPE): <input type="checkbox"/> Acid Resistant <input type="checkbox"/> Impermeable <input checked="" type="checkbox"/> Abrasion Resistant <input type="checkbox"/> Other (Specify): EYE PROTECTION: Approved safety glasses, goggles or faceshields should be used when handling refractory products. FOOT PROTECTION (CHECK TYPE): <input type="checkbox"/> Metatarsal safety <input type="checkbox"/> Impermeable PROTECTIVE CLOTHING (SPECIFY):

SECTION IX - SPECIAL PRECAUTIONS
<input type="checkbox"/> If block is checked, product contains coal tar pitch, petroleum pitch or creosote. Over-exposure to dust/volatiles may cause cancer and/or irritation to eyes, skin and respiratory tract. Do not breathe dust/fumes; use with proper ventilation. NIOSH approved respirators and protective clothing should be worn while handling this product.
<input type="checkbox"/> If block is checked, this resin bonded product contains free formaldehyde and phenol. Exposure to dust and vapor may cause irritation of skin, eyes, nose, and throat. Allergic skin reaction may also occur. Avoid prolonged or repeated contact with eyes or skin; avoid breathing dust or vapor. Wash thoroughly after handling. Wear rubber gloves and approved NIOSH respirator.
<input checked="" type="checkbox"/> If block is checked, the product contains crystalline silica for which there is limited evidence of a possible association with the incidence of cancer in humans.
<div style="display: flex; justify-content: space-between;"> <div>Prepared By: C. D. Jamison</div> <div>Emergency Phone: 412-562-6437</div> </div>

Kib 3 January 1999

MATERIAL SAFETY DATA SHEET



HARBISON-WALKER REFRACTORIES
Division of Dresser Industries, Inc.
2 Gateway Center, Pittsburgh, Pennsylvania 15222

WARNING LABEL: SILICA

TELEPHONE: (412) 562-6200
TELETYPE: 710-664-4347

10/01/84

DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION

Product Tradename:

HARWACO BOND

Type of Refractory:

Sodium Silicate Bonded High Alumina Mortar

*For chrome containing refractories, indicate approximate percentage _____, and check applicable block.

- ☐ Contains chrome ore consisting predominantly of the mineral chromite (MgFe).O.(AlFeCr)₂O₃
☐ Contains chromium III oxide

SECTION II - HAZARDOUS INGREDIENTS

SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV®	NIOSH CRITERIA DOCUMENT NO.
<input checked="" type="checkbox"/> Quartz	SiO ₂	001317799	1 - 2%	10 mg/m ³ % Respirable Quartz +2	SAME	75-120
<input checked="" type="checkbox"/> Cristobalite	SiO ₂	14464-46-1	1 - 3%	½ Quartz Value	SAME	75-120
<input type="checkbox"/> Tridymite	SiO ₂	15468-32-3		½ Quartz Value	SAME	75-120
<input type="checkbox"/> Fused Silica	SiO ₂	007631869		NONE	Use Quartz TLV	75-120
<input type="checkbox"/> Coal Tar Products	N/A	MX8001589		0.2 mg/m ³	SAME	78-107
<input type="checkbox"/> Petroleum Pitch	N/A	MX8052424		NONE	5.0 mg/m ³	78-106
<input type="checkbox"/> Phosphoric Acid	H ₃ PO ₄	007664382		1.0 mg/m ³ (mist)	SAME	NONE
<input type="checkbox"/> Lime	CaO	001305788		5.0 mg/m ³	2.0 mg/m ³	NONE
<input checked="" type="checkbox"/> Sodium Silicate	03-Si .2Na	006834920	20 - 25%	NONE	NONE	NONE
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

SECTION III - PHYSICAL DATA

Appearance and Odor: Gray to tan color; earthy odor.

Specific Gravity: 1.92

pH: 10 - 12

Solubility In Water: About 10% (dry basis)

Soluble Constituents: Sodium Silicate

Other:

SECTION IV - FIRE AND EXPLOSION DATA

UNLESS OTHERWISE NOTED, NONE. Product is a refractory.

NOTES:

SECTION V - HEALTH HAZARD DATA		EXPOSURE REQUIRED	
*SEE CHECKED BLOCKS		PROLONGED	SHORT TERM
INGREDIENT	EFFECTS OF OVEREXPOSURE		
Free Crystalline Silica	Delayed lung fibrosis - silicosis	✓	
<input checked="" type="checkbox"/> Coal Tar Products	Skin, lung, mucous membrane carcinogen	✓	
	Skin irritation; photosensitization		✓
<input type="checkbox"/> Petroleum Pitch	(Same as Coal Tar Products)		
<input type="checkbox"/> Lime	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/> Phosphoric Acid	Primary irritant - skin, eyes, etc.		✓
<input type="checkbox"/> Sodium Silicate	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/>			
<input type="checkbox"/>			

EMERGENCY OR FIRST AID PROCEDURES:

☐ Irritants: Wash from skin or flush from eyes using copious amounts of water.

☒ Coal Tar Products: Remove from skin by washing with soap and water. DO NOT use solvents. Same for petroleum pitch.

☐ Other:

SECTION VI - REACTIVITY DATA	
STABILITY: <input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE Incompatibility (materials to avoid) Hazardous decomposition products: Hazardous Polymerization: <input type="checkbox"/> may occur <input checked="" type="checkbox"/> will not occur	COMMENTS: Store in cool, moist area prior to use.

SECTION VII - SPILL AND LEAK PROCEDURES	
Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.	
COMMENTS:	

SECTION VIII - SPECIAL PROTECTION INFORMATION	
RESPIRATORY PROTECTION (CHECK TYPE): <input checked="" type="checkbox"/> Approved Dust <input type="checkbox"/> Other (Specify): VENTILATION: Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits	Prevent direct skin contact.
PROTECTIVE GLOVES (CHECK TYPE): <input type="checkbox"/> Acid Resistant <input type="checkbox"/> Impermeable <input type="checkbox"/> Abrasion Resistant <input checked="" type="checkbox"/> Other (Specify):	
EYE PROTECTION: Approved safety glasses, goggles or faceshields should be used when handling refractory products.	
FOOT PROTECTION (CHECK TYPE): <input checked="" type="checkbox"/> Metatarsal safety <input type="checkbox"/> Impermeable PROTECTIVE CLOTHING (SPECIFY):	

SECTION IX - SPECIAL PRECAUTIONS	
<input type="checkbox"/> If block is checked, product contains coal tar products. Workers should not be exposed to furnace "burn-in" volatiles.	
<input type="checkbox"/> Other (Specify):	

MATERIAL SAFETY DATA SHEET

Date: 04/25/97

No. 846

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265
EMERGENCY TELEPHONE NUMBER — 573-473-3626

SECTION I

PRODUCT NAME: GREENKLEEN-60
GREENKLEEN-60 Plus

PRODUCT TYPE: Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO₂ = 30-35% Al₂O₃ = 58-62% **FORMULA:** Not Applicable
CaO = 2-4% Fe₂O₃ = 1%

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (< 5%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (< 2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Amorphous Silica (SiO ₂) (4-6%)	2 mg/m ³ * Respirable Dust	69012-64-2
Alumina (Al ₂ O ₃) (8-12%)	10 mg/m ³ * Total Dust	1344-28-1
Refractory Cement (8-9%)	None (See Section IV)	12005-57-1

*Source: American Conference of Governmental Industrial Hygienists, 1996.

SECTION III

HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV
FIRST AID MEASURES

EFFECT OF OVEREXPOSURE:

EYES: ACUTE: Dust can cause mechanical irritation. Product's cement can cause eye irritation.
CHRONIC: None Known

SKIN: ACUTE: Product's cement can cause skin irritation.
CHRONIC: None Known

INHALATION: ACUTE: Dust generated can cause breathing discomfort or irritation.
CHRONIC: Long-term exposure to dust may cause lung damage.

INGESTION: ACUTE: Unknown
CHRONIC: Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V
FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray to Tan, Granular Mixture		
BOILING POINT:	Not Applicable	pH:	8-9
SOLUBILITY IN WATER:	Slight	ODOR:	None
SPECIFIC GRAVITY:	2.8	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS No. 846, Dated 10/18/95.

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

JH:\MSDS\CURRENT\GK60.047

Rec'd from USG
05/10/95

2-17-00
No. 2366

MATERIAL SAFETY DATA SHEET

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO. 65265
TELEPHONE NUMBER -- 314-473-3626

SECTION I

PRODUCT: INSBLOK-19

CHEMICAL FAMILY: Slag Wool Fiber and Clay (Mixture)

SECTION II PRODUCT INGREDIENTS

<u>MATERIAL</u>	<u>%</u>	<u>TLV</u> <u>mg/m³</u>	<u>PEL</u> <u>mg/m³</u>	<u>CAS</u> <u>NUMBER</u>
Slag Wool fiber *	>60	10	15(T)/5(R)	65997-17-3
Expanded perlite	<15	10	15(T)/5(R)	93763-70-3
Starch	<5	10	15(T)/5(R)	9005-25-8
Cellulose (recycled paper)	<5	10	15(T)/5(R)	9004-34-6
Kaolin	<20	10	15(T)/5(R)	1332-58-7
Asphalt Wax Emulsion	< 2	5	5	8052-42-4
Silica, crystalline* (quartz)	0-2	0.1(R)	0.1(R)	14808-60-7
(* trace quantity)				

If laminated, contains the following adhesive:

Vinyl alcohol polymer	<1	(NE)	(NE)	9002-89-5
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* - WHMIS Class D2B (T) - Total dust (R) - Respirable (NE) - Not Established

SECTION III PHYSICAL DATA

<u>APPEARANCE AND ODOR:</u>	Tan-colored board, low odor.
<u>DENSITY:</u>	16-20 pcf
<u>SOLUBILITY IN WATER:</u>	None

SECTION IV FIRE AND EXPLOSION HAZARD DATA

<u>FLASH POINT (METHOD USED):</u>	None
<u>EXTINGUISHING MEDIA:</u>	Not Combustible
<u>SPECIAL FIRE FIGHTING PROCEDURES:</u>	None. For Fire hazard Classification information see the product specification sheets.
<u>SPECIAL FIRE FIGHTING PROCEDURES:</u>	None
<u>UNUSUAL FIRE AND EXPLOSION HAZARDS:</u>	None

SECTION V
HEALTH HAZARD DATA

Dust generated from this product would be considered a nuisance dust. This product can release nuisance dust in handling or during use. Eye, nose, throat, and upper respiratory irritation can occur with prolonged exposure to high concentrations. If skin irritation occurs, it is due to mechanical action of fibers rubbing skin.

EFFECTS OF OVEREXPOSURE:

Dust from this product may cause transitory mechanical irritation to eyes and skin or upper respiratory tract.

EYES: ACUTE: Immediately flush eyes thoroughly with plenty of water for 15 minutes to remove particles. If burning, redness, itching, pain or other symptoms persist or develop, consult physician.
CHRONIC: None Known.

SKIN: ACUTE: Direct, prolonged or repeated contact with the skin may cause irritation. Rubbing of this product against the skin can result in abrasions. Rinse with water until free of material to avoid abrasions, then wash skin thoroughly with soap and water. If irritation persists, consult physician.
CHRONIC: None Known.

INHALATION: ACUTE: Inhalation of dusts from this product may irritate the nose, throat, lungs, and upper respiratory tract. Persons subjected to large amounts of this dust will be forced to leave area because of nuisance conditions such as coughing, sneezing and nasal irritation from dust. If respiratory symptoms persist, consult physician.
CHRONIC: Chronic overexposure to respirable crystalline silica can result in lung disease (i.e., silicosis) and/or lung cancer.

If board is cut with a power saw, dust may contain respirable silica and mineral fiber. Long term breathing of quantities of respirable silica exceeding the TLV may cause lung disease. Although inconclusive, three recent industry-supported research studies indicate that factory workers who were first employed in the manufacture of mineral wool or glass wool more than 30 years ago have a somewhat higher risk of lung cancer or other disease than the general public. Tobacco smoking by these workers was found to contribute to the higher incidence of lung cancer. Because of this it is recommended that people handling this material on a regular basis not smoke.

The scientists reporting these results and independent scientists reviewing these results agree that further study is necessary to determine what other factors might be responsible for this reported increased risk. Further studies are now being conducted to investigate what effects other occupational exposures and lifestyle had on these workers. The records will also be examined to learn if these workers had exposure to other known carcinogens in the past.

Results from two separate long-term animal inhalation studies showed that breathing of airborne mineral wool fiber did not cause any lung cancer or other lung diseases.

When installing or otherwise handling this product, wear a NIOSH/MSHA-approved dust mask or respirator, gloves and long sleeved, loose-fitting clothing closed at the neck and wrists. Wear safety glasses or goggles while installing.

INGESTION: ACUTE: Unknown. Call physician.
CHRONIC: Unknown.

SECTION V
HEALTH HAZARD DATA
(Continued)

EMERGENCY AND FIRST AID PROCEDURES:

EYES: Flush thoroughly with water for 15 minutes to remove particles. If irritation persists, consult physician.

SKIN: Irritated areas should be wash thoroughly by rinsing gently with cool water followed with warm water and mild soap to remove fiber from skin.

INHALATION: Inhalation of dusts from this product can irritate the nose, throat, lungs, and upper respiratory tract. Leave the area of dust exposure and remain away until coughing and other symptoms subside. If respiratory symptoms persist (irritation, cough, nausea, dizziness, etc.), consult physician.

INGESTION: Call a physician.

TARGET ORGANS: Respiratory Tract, Eyes, and Skin

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED: Pre-existing upper respiratory and lung disease such as, but not limited to, bronchitis, emphysema and asthma.

PRIMARY ROUTES OF ENTRY: Inhalation, Eyes and Skin contact.

CARCINOGENIC OF INGREDIENTS:

<u>MATERIAL</u>	<u>IARC</u>	<u>NTP</u>	<u>OSHA</u>
Respirable Crystalline Silica	2A	Anticipated	Not Listed
Slag Wool Fiber	2B	Not Listed	Not Listed

The quantity of respirable crystalline silica in this product has not been determined. Respirable crystalline silica is classified by IARC as a probable human carcinogen (2A). Long-term breathing of silica can cause lung disease (i.e., silicosis) and/or possibly lung cancer.

=====

SECTION VI
REACTIVITY DATA

<u>STABILITY:</u>	Stable
<u>HAZARDOUS POLYMERIZATION:</u>	Will not occur.
<u>INCOMPATIBILITY:</u>	Acids (gives off H ₂ S under certain acidic conditions).
<u>HAZARDOUS DECOMPOSITION:</u>	None Known.

=====

SECTION VII
SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Normal cleanup procedures.

Avoid creating excessive dust. Wear appropriate protective equipment.

WASTE DISPOSAL METHOD: Depose of in accordance with federal, state and local regulations.

SECTION VIII
SPECIAL PROTECTION INFORMATION

No TLV assigned to this product, see Ingredients Section. Minimize exposures in accordance with good hygiene practice.

RESPIRATORY PROTECTION: Avoid inhalation of dust. Dust from product may cause skin, eye, nose, throat or upper respiratory irritation. Wear a NIOSH/MSHA-approved respirator if TLV is exceeded and/or when dusty conditions exist to guard against nuisance particles.

VENTILATION: Provide general ventilation and local exhaust ventilation to meet TLV requirements.

PROTECTIVE EQUIPMENT: Gloves if dust is irritating, tight fitting goggles in dusty environment. Wear long sleeved, loose fitting clothing closed at the neck and wrists and minimize skin exposure. Wash work clothes separately from other clothing. Rinse washer thoroughly after use. Wear safety glasses or goggles for eye protection to avoid particulate irritation of the eye.

=====

SECTION IX
SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a dry place. When cutting or breaking, avoid creating excessive dust. Minimize exposures in accordance with good hygiene practice. During handling wear the appropriate respiratory, eye and skin protection if warranted per environmental conditions.

OTHER PRECAUTIONS: During the initial firing of a vessel insulated with this product, if the insulation temperature exceeds approximately 450°F the combustion products of a paper fire will be emitted. If the initial firing or curing is done in an oxygen deficient atmosphere, carbon monoxide and aldehydes are likely to be produced. Therefore the adjacent area must be well ventilated.

△ WARNING

Dust hazard. Cut and trim with knife, razor or hand saw. Do not cut with power equipment unless a dust collector is used on the equipment or local exhaust is used and a NIOSH/MSHA-approved respirator is worn. Failure to follow these instructions may result in overexposure to airborne man-made mineral fiber. Airborne man-made mineral fiber and crystalline silica are thought to increase the risk of lung cancer.

Overexposure to dust can cause eye, skin, nose, throat or respiratory irritation.
Wear eye and skin protection.

FIRST AID: For skin irritation, rinse with cool water, followed by washing with soap and warm water. For eye irritation, flush eyes thoroughly with water for 15 minutes. If irritation persists, consult a physician. Product safety information: (314) 473-3626.

THIS PRODUCT CONTAINS NO ASBESTOS.

Manufactured for A.P. Green Industries, Inc.
by USG Interiors, Inc.
125 S. Franklin Street
Chicago, IL 60606


Thermal Ceramics

MATERIAL SAFETY DATA SHEET

MSDS No: 214	Date Prepared: 05/01/1987	Revised/Reviewed: 06/01/1998
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1. PRODUCT AND COMPANY IDENTIFICATION

Material Name: Refractory Ceramic Fiber Product
Common Name: RCF; Ceramic Fiber; Man-made Vitreous Fiber (MMVF); Synthetic Vitreous Fiber (SVF)
Intended Use: High temperature industrial thermal insulation
Trade Names: Kao-Tex™ 2000
 Cloth, Tape, Rope

Manufacturer/Supplier: THERMAL CERAMICS INC.
 P.O. BOX 923; DEPT. 300
 AUGUSTA, GA 30903-0923
 Product Stewardship Program: 800-722-5681 / FAX: 706-560-4053
 For additional MSDS's, call our automated FAXBACK: 800-329-7444

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT CAS NUMBER	PERCENT	OSHA PEL	ACGIH TLV	MANUFACTURER RECOMMENDED
Refractories, fibers, aluminosilicate 142844-00-6	80 - 95	Not Established	Not Established	0.5 f/cc *
Acrylic latex binder NONE	7 - 12	Not Established	Not Established	
Clay NONE	7 - 12	15 mg/m ³ (total); 5 mg/m ³ (respirable)	Not Established	
Natural rubber NONE	1 - 3	Not established	Not Established	
Calcium carbonate 1317-65-3	1 - 3	15 mg/m ³ (total); 5 mg/m ³ (respirable)	10 mg/m ³	
Titanium dioxide 13463-67-7	1 - 3	15 mg/m ³	10 mg/m ³	

NOTES:

* Thermal Ceramics' recommended exposure guideline (REG) for respirable fibers as an 8 hour time weighted average (TWA) exposure, based on air samples collected and analyzed using NIOSH method 7400(B).

(See Section 8 for Personal Protection Guidelines.)

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

** WARNING **

- Possible cancer hazard by inhalation. [SEE BELOW]
- Carbon monoxide may be generated during initial heating.
- Pre-existing medical conditions, including dermatitis, asthma or chronic lung disease may be aggravated by exposure; individuals who are atopic (with a history of allergies) may experience greater amounts of skin and respiratory irritation.

MATERIAL SAFETY DATA SHEET

MSDS No: 214

Date Prepared: 05/01/1987

Revised/Reviewed: 06/01/1998

Possible Health Effects

Target Organs: Eyes, skin and respiratory system
Primary Entry Route: Inhalation
Acute effects: Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to the skin on prolonged contact.
Chronic effects: Studies to date, involving occupationally exposed workers, have not identified any increased incidence of respiratory disease. Long-term, high-dose exposure to specially-sized, rodent respirable fiber has resulted in the development of fibrosis, lung cancer and mesothelioma in rats & hamsters. [See Section 11 of this MSDS for more information.]

Hazard Classification:

Although studies, involving occupationally exposed workers, have not identified any increased incidence of respiratory disease, results from animal testing have been used as the basis for hazard classification:

The Seventh Annual Report on Carcinogens (1994), prepared by the **National Toxicology Program (NTP)**, classified respirable refractory ceramic fiber (RCF) and glasswool as substances reasonably anticipated to be carcinogens.

The **International Agency for Research on Cancer (IARC)** has classified man-made vitreous fibers (MMVF), including fibrous glasswool, mineral wool (rockwool & slagwool), and refractory ceramic fiber, as possible human carcinogens (Group 2B). The classification of refractory ceramic fiber was based on sufficient evidence of carcinogenicity in animals and no available data in humans.

The **State of California**, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "ceramic fibers (airborne fibers of respirable size)" as a material known to the State of California to cause cancer.

The **Commission of The European Communities** has classified RCF as a substance which should be regarded as if it is carcinogenic to man.

IARC has also classified respirable crystalline silica, a possible byproduct of RCF devitrification following sustained, high temperature use (>1800°F), as a substance known to be carcinogenic to humans (Group 1). [See Section 16 of this MSDS for more information.]

Signs and Symptoms of Overexposure:

Eye Contact: Physical irritation - inflammation
Skin Contact: Physical irritation - rash
Ingestion: May cause temporary irritation to the gastrointestinal tract.
Inhalation: Irritation or soreness in throat, nose and respiratory tract

4. FIRST AID MEASURES

Eye Contact: Flush with large amounts of water for at least 15 minutes. Do not rub eyes.
Skin Contact: Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.
Ingestion: Do not induce vomiting; drink plenty of water.
Inhalation: Remove affected person to clean fresh air. If breathing is difficult, have trained person administer oxygen.
**** If any of the symptoms persist, seek medical attention immediately.**

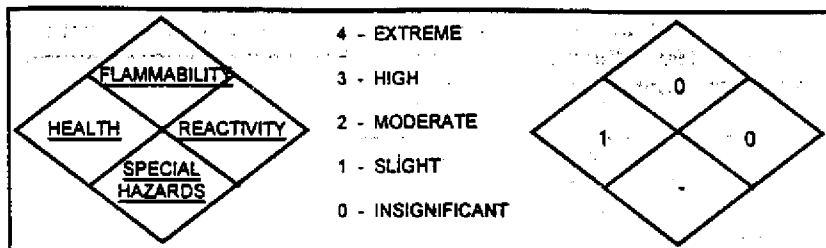
MATERIAL SAFETY DATA SHEET

MSDS No: 214

Date Prepared: 05/01/1987

Revised/Reviewed: 06/01/1998

5. FIRE FIGHTING MEASURES



NFPA Unusual Hazards:

None

Flash Point:

Ignition at approximately 300° F for organic carrier binder

Extinguishing Media:

Use extinguishing media appropriate to the surrounding fire.

Explosion Hazards:

None

Protective Equipment:

Wear NIOSH approved respirator together with other protective gear appropriate to the surrounding fire.

6. ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures:

Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

7. HANDLING AND STORAGE

Handling:

Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

Handling After-Service:

- Aluminosilicate fibers become friable after exposure to high temperatures and may be partially converted to crystalline silica. [See Section 16 for additional information.]
- Handling after-service fibers may result in exposure to crystalline silica and fibers. It is possible that other contaminants might also be present depending on the material's application. [See Section 8 - Personal Protection Equipment.]
- To reduce exposure to these materials, follow the recommendations in Section 8 and minimize dust by dampening the material with a water/surfactant mist. Do not allow water to accumulate on the floor.

Storage:

This product is stable under all conditions of storage. Store in original factory container in a dry area. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use engineering controls such as ventilation and dust collection devices to reduce airborne fiber concentrations to the lowest attainable level. Good ventilation should be provided during initial heating.

Respiratory Protection:

When it is not possible or feasible to significantly reduce airborne fiber and dust levels through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne fibers and respirable cristobalite concentrations using NIOSH method 7400(B) and 7500 respectively and select the appropriate respiratory protection based upon the results of that

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monitoring, 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH certified respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

Recommended Respiratory Protection When Handling RCF Products

• AS-PRODUCED and AFTER-SERVICE FIBER ⁽¹⁾

CONCENTRATION ⁽²⁾

RESPIRATOR

Up to 0.5 f/cc	Disposable particulate respirator (N, R, or P, 95 rated) ^{(3) (4)}
0.5 f/cc - 5 f/cc	Half-mask, air-purifying respirator with high efficiency particulate air (HEPA) or P100 rated filter cartridges.
5 f/cc - 25 f/cc	Full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges or powered air-purifying respirator (PAPR) with HEPA or P100 rated filter cartridges.
> 25 f/cc	Full facepiece positive pressure supplied air respirator.

⁽¹⁾ Unless air monitoring data indicates a lower exposure, as a minimum, use a full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges during furnace tear out or when conducting RCF removal in a confined area. [See Section 16]

⁽²⁾ Eight hour time weighted average (TWA) exposures determined by air samples collected and analyzed using NIOSH method 7400(B) for airborne fibers.

⁽³⁾ Not recommended for fiber chopping, blanket/module folding, cutting, installation or other tasks using power tools and machinery (e.g. band sawing, lathing, grinding, drilling, die cutting) unless effective engineering controls reduce fiber exposures.

⁽⁴⁾ If oil present, use only R or P rated filters.

NOTE: For unknown exposures or when working with other contaminants, consult an industrial hygienist for air monitoring and respirator selection.

Protective Clothing: Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Eye Protection: Goggles/safety glasses with sideshields should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White odorless shiny thread or yarn	Vapor Density:	Not applicable
Chemical Family:	Vitreous Aluminosilicate Fibers	Specific Gravity Range:	2.50 - 2.70
Vapor Pressure:	Not applicable	Volatile by Volume (%):	0
Boiling Point:	Not applicable	pH:	Not applicable
Melting Point:	>3200°F (1768°C)		
Water Solubility (%):	Not soluble in water		

10. STABILITY AND REACTIVITY

Hazardous Polymerization:	Will not occur
Chemical Incompatibilities:	Hydrofluoric acid, phosphoric acid, strong alkalis
Hazardous Decomposition Products:	Carbon monoxide, carbon dioxide, oxides of nitrogen, smoke, and small amounts of aromatic and aliphatic hydrocarbon

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11. TOXICOLOGICAL INFORMATION

Epidemiology:

Industry epidemiologic investigations of RCF production workers are ongoing. The preliminary evidence, obtained from employees in RCF manufacturing facilities, is as follows:

- 1) There is no evidence of any fibrotic lung disease (interstitial fibrosis) on x-ray.
- 2) There is no evidence of any lung disease among those employees exposed to RCF that have never smoked. Data, however, indicates that RCF workers who smoke may have a greater reduction in pulmonary function than those who do not. Therefore, it is recommended that persons who work with RCF do not smoke.
- 3) A statistical trend was observed in the exposed population between the duration of exposure to RCF and a decrease in some measures of pulmonary function. These observations are clinically insignificant. The results would be interpreted as being within the normal range if these observations were made on an individual employee.
- 4) Pleural plaques (thickening along the chest wall) have been observed in a small number of employees who had a long duration of employment. There are several occupational and non-occupational causes for pleural plaques. Pleural plaques are a marker of exposure only and under most circumstances are not associated with any measurable effect on lung function.

Toxicology:

A number of toxicologic bioassay studies with rats and hamsters on the health effects of refractory ceramic fiber (RCF) inhalation exposures have been completed. In a lifetime, nose-only inhalation study using rats exposed to specially prepared RCF at a maximum tolerated dose (MTD) (30 mg/m^3), the animals developed progressive lung damage (interstitial fibrosis), lung cancer and cancer of the pleural lining between the chest wall and lung (mesothelioma). Hamsters exposed under the same conditions developed interstitial fibrosis and pleural cancer but no lung cancer.

A multiple dose inhalation study in rats at exposures of 3, 9, and 16 mg/m^3 (approximately 25, 75 and 115 fiber/cc) was also carried out. The dose responsiveness of rats to the adverse effects of RCFs was established. At all exposure levels there was no statistically significant increase in lung tumors in the animals. A single mesothelioma was diagnosed in one of the 116 animals in the 9 mg/m^3 exposure group. No fibrosis was observed in the 3 mg/m^3 exposure group. These data tend to indicate that a critical dose level may exist below which neither fibrosis nor tumors are observed, i.e., a practical threshold.

12. ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

13. DISPOSAL INFORMATION

Waste Management:

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

TCLP Disposal:

As manufactured, refractory ceramic fiber blankets were tested using EPA's Toxicity Characteristics Leaching Procedure (TCLP). Results showed there were no detectable contaminants or detectable leachable contaminants which exceeded the regulatory levels.

MATERIAL SAFETY DATA SHEET

MSDS No: 214

Date Prepared: 05/01/1987

Revised/Reviewed: 06/01/1998

14. TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard Class: Not regulated
Labels: Not applicable
Placards: Not applicable
Bill of Lading: Product name

United Nations (UN) Number: Not applicable
North America (NA) Number: Not applicable

15. REGULATORY INFORMATION

United States Regulations

SARA Title III: This product does not contain any substances reportable under Sections 302, 304, 313 (40 CFR 372). Sections 311 and 312 apply.

OSHA: Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication Standard.

TSCA: All substances contained in this product are listed in the TSCA Chemical Inventory [Section 8(b)].

California: Listed as "Ceramic Fibers (airborne particles of respirable size)" Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986: Known to the State of California to cause cancer.

Other States: RCF products are not known to be regulated by states other than California; however, state and local OSHA and EPA regulations may apply to these products. Contact your local agency if in doubt.

International Regulations

Canadian WHMIS: Class D-2A Materials Causing Other Toxic Effects

Canadian EPA: All substances in this product are listed, as required, on the Domestic Substance List (DSL).

European Class: Refractory ceramic fiber (RCF) has been classified by the European Union as Category 2 carcinogen, that is it "should be regarded as if it is carcinogenic to man". It has also been classified as an "irritant".

16. OTHER INFORMATION

Precautionary Measures to be Taken After Service and Upon Removal:

As manufactured, RCF products are vitreous aluminosilicates which may transform upon heating at temperatures above 1800°F to mullite and cristobalite (a form of crystalline silica). Removal of after-service RCF may generate respirable dust. Prolonged/repeated inhalation of respirable free crystalline silica dust may cause delayed lung injury (silicosis). In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystalline silica from occupational sources inhaled in the form of quartz or cristobalite is carcinogenic to humans (Group 1) [IARC Monograph Vol. 68, June 1997]. However, in reaching its conclusion, IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g. cigarette smoking) or distribution of its polymorphs. The OSHA PEL for respirable cristobalite is 0.05 mg/m³. Appropriate ventilation and respiratory protection should be provided in compliance with OSHA standards. (See Section 8)

HMIS Hazard Rating:

HMIS Acute Health: 1*
HMIS Flammable: 0
HMIS Reactivity: 0

MATERIAL SAFETY DATA SHEET

MSDS No: 214	Date Prepared: 05/01/1987	Revised/Reviewed: 06/01/1998
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HMIS Personal Protective: To be determined by user
 *See Section 3 of the MSDS for possible chronic health effects.

SARA Title III Hazard Categories:

Acute Health:	Yes	Pressure Hazard:	No
Chronic Health:	Yes	Reactivity Hazard:	No
Fire Hazard:	No		

Definitions:

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS:	Chemical Abstracts Service Registry Number
EPA:	Environmental Protection Agency
f/cc:	Fibers per cubic centimeter
HEPA:	High Efficiency Particulate Air
HMIS:	Hazardous Materials Identification System
mg/m3 :	Milligrams per cubic meter of air
mppcf:	Million particles per cubic meter
MSHA:	Mine Safety and Health Administration
NFPA:	National Fire Protection Association
NIOSH:	National Institute for Occupational Safety and Health
OSHA:	Occupational Safety and Health Administration
RCRA:	Resource Conservation and Recovery Act
SARA:	Superfund Amendments and Reauthorization Act
Title III:	Emergency Planning and Community Right to Know Act
...Section 302:	Extremely Hazardous Substances
...Section 304:	Emergency Release
...Section 311:	MSDS/List of Chemicals
...Section 312:	Emergency and Hazardous Inventory
...Section 313:	Toxic Chemicals Release Reporting
STEL:	Short-Term Exposure Limit
TCLP:	Toxicity Characteristics Leaching Procedures (EPA)
TLV:	Threshold Limit Values (ACGIH)
TSCA:	Toxic Substance Control Act
WHMIS:	Workplace Hazardous Materials Information System (Canada)
29 CFR 1910.134 & 1926.103:	OSHA Respiratory Protection Standard
29 CFR 1910.1200 & 1926.59:	OSHA Hazard Communications Standard

Revisions: Replaces revision 03/16/98. Revised Sections 3, 8 and 11 with updated information.

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.

MATERIAL SAFETY DATA SHEET

MSDS No: 214

Date Prepared: 05/01/1987

Revised/Reviewed: 06/01/1998

PRODUCT SAFETY INFORMATION

REFRACTORY CERAMIC FIBER PRODUCT

WARNING:

This product contains refractory ceramic fiber, which has been identified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans.

Avoid breathing fiber particulates and dust

RISKS:

- Possible cancer hazard by inhalation.
- May cause temporary irritation to eyes, skin and respiratory tract.

PRECAUTIONARY MEASURES:

- Minimize airborne particulates and dust with engineering controls.
- Wear a NIOSH certified respirator.
- Wear long sleeved, loose-fitting clothing, eye protection, and gloves.
- Wash work clothing separately and rinse washing machine after use.

FIRST AID MEASURES:

- | | |
|--------------------|---|
| Eyes: | Flush with Water. |
| Skin: | Wash with soap and warm water. |
| Ingestion: | Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop. |
| Inhalation: | Remove to fresh clean air. |

If any of the above irritations persists, seek medical attention immediately.

FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES, REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS).

THERMAL CERAMICS INC.
P.O. BOX 923 DEPT. 300
AUGUSTA, GA 30903-0923
(800) 722-5681



Canadian WHMIS Class D-2A: Material causing other toxic effects.

Label No: 1-0991 (Rev. 05/98)

MATERIAL SAFETY DATA SHEET

Date: 07/17/97

No. 1287

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: 'SAIRSET[®]
'SAIRSET[®] DC

PRODUCT TYPE: Refractory Mortar

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO₂ = 58-61% Al₂O₃ = 32-35% **FORMULA:** Not Applicable
Fe₂O₃ = 1-2% NaKO = 2-3%

SECTION II PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (10-20%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (10-20%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Dry and Liquid Sodium Silicate	(None)	1344-09-8

*Source: American Conference of Governmental Industrial Hygienists, 1996.

SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV
FIRST AID MEASURES

EFFECT OF OVEREXPOSURE:

EYES: ACUTE: Dust can cause mechanical irritation. Sodium silicate can cause eye injury or irritation.
CHRONIC: None Known

SKIN: ACUTE: Can cause mechanical abrasion. Sodium silicate can cause skin drying and chapping.
CHRONIC: None Known

INHALATION: ACUTE: Dust, if present, can cause upper respiratory irritation.
CHRONIC: Long-term exposure to dust may cause lung damage.

INGESTION: ACUTE: Unknown
CHRONIC: Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. Seek medical attention.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V
FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Sweep or shovel up and place in a container for disposal. Pre-dampening reduces tendency to dust.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

2-17-00

MATERIAL SAFETY DATA SHEET 1062

Date: 09/26/97

No. 1062

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

SECTION I

<u>PRODUCT NAME:</u>	GREENPAK-85-P GREENPAK-85-P Plus GREENPAK-85-P GR GREENPAK-85-P GR Plus GREENPAK-85-PF GREENPAK-85-PF Plus	GREENPAK-85-MP GREENPAK-85-MP Plus GREENPAK-85-MP RAM GREENPAK-85-MP RAM Plus GREENPAK-85-MP S GREENPAK-85-MP S Plus
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PRODUCT TYPE: Plastic Refractory (Solid or Wet)

Canadian WHMIS Classification: D,2,E

NFPA Rating: 1-0-0

<u>CHEMICAL FAMILY:</u>	SiO₂ = 6-14% Fe₂O₃ = 1-2% NaKO = <1%	Al₂O₃ = 82-90% TiO₂ = 2-3% P₂O₅ = 3-4%	<u>FORMULA:</u> Not Applicable
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SECTION II PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂) (<10%)	0.05 mg/m ³ * Respirable Dust	14464-46-1
Quartz (SiO ₂) (<2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Alumina (Al ₂ O ₃) (<30%)	10 mg/m ³ * Total Dust	1344-28-1
Phosphoric Acid (H ₃ PO ₄) (<10%)	1 mg/m ³ *	7664-38-2**

*Source: American Conference of Governmental Industrial Hygienists, 1996.

**This product contains phosphoric acid, CAS No. 7664-38-2, which is reportable under Section 313 of Title III of SARA and 40 CFR Part 372. For purposes of reporting environmental discharge use 6% phosphoric acid content.

SECTION III HAZARDS INFORMATION

Since this product contains phosphoric acid, toxic PO_x fumes can be formed on burn in.

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

<u>EYES:</u>	ACUTE:	Dust or aggregate can cause mechanical irritation. Phosphoric acid can cause eye injury.
	CHRONIC:	None Known
<u>SKIN:</u>	ACUTE:	Can cause mechanical abrasion. Phosphoric acid can cause skin injury.
	CHRONIC:	None Known
<u>INHALATION:</u>	ACUTE:	Dust, if present, can cause upper respiratory irritation.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
<u>INGESTION:</u>	ACUTE:	Phosphoric acid is moderately toxic if ingested.
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. Promptly, consult physician.

SKIN: Promptly wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Physician or poison control center should be advised that product contains phosphoric acid (<7%). Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If heated to decomposition, the phosphoric acid will emit toxic fumes of PO_x.

SECTION VI
ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Sweep, shovel up, or pick up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Leather gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped containers of product.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray Mixture (Solid or Wet)		
BOILING POINT:	Not Applicable	pH:	3-5
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	3.2-3.4	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed

Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in **Section II - HAZARDOUS INGREDIENTS** section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 02/05/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Senior Technical Consultant
Phone: 573-473-3392

JH:\MSDS\CURRENT\GP85P.097

MATERIAL SAFETY DATA SHEET



HARBISON-WALKER REFRACTORIES
Division of Dresser Industries, Inc.
2 Gateway Center, Pittsburgh, Pennsylvania 15222

TELEPHONE: (412) 562-6200
TELETYPE: 710-664-4341

10/01/84

DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

SECTION I - PRODUCT IDENTIFICATION

Product Tradename: ALUSA	Type of Refractory: High Alumina Brick
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*For chrome containing refractories, indicate approximate percentage _____, and check applicable block.
☐ Contains chrome ore consisting predominantly of the mineral chromite (MgFe).O.(AlFeCr)₂O₃
☐ Contains chromium III oxide

SECTION II - HAZARDOUS INGREDIENTS

SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L. 10 mg/m ³	ACGIH TLV ⁸	NIOSH CRITERIA DOCUMENT NO.
<input type="checkbox"/> Quartz	SiO ₂	001317799		% Respirable Quartz +2	0.1 mg/m ³	75-120
<input checked="" type="checkbox"/> Cristobalite	SiO ₂	14464-46-1	0 - 1%	1/2 Quartz Value	0.05 mg/m ³	75-120
<input type="checkbox"/> Tridymite	SiO ₂	15468-32-3		1/2 Quartz Value	0.05 mg/m ³	75-120
<input type="checkbox"/> Fused Silica	SiO ₂	007631869		NONE	Use Quartz TLV	75-120
<input type="checkbox"/> Coal Tar Products	N/A	MX8001589		0.2 mg/m ³	SAME	78-107
<input type="checkbox"/> Petroleum Pitch	N/A	MX8052424		NONE	5.0 mg/m ³	78-106
<input type="checkbox"/> Phosphoric Acid	H ₃ PO ₄	007664382		1.0 mg/m ³ (mist)	SAME	NONE
<input type="checkbox"/> Lime	CaO	001305788		5.0 mg/m ³	2.0 mg/m ³	NONE
<input type="checkbox"/> Sodium Silicate	03-Si .2Na	006834920		NONE	NONE	NONE
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

SECTION III - PHYSICAL DATA

Appearance and Odor: Buff color; no odor.

Specific Gravity: 2.55 pH: ND

Solubility in Water: Insoluble

Soluble Constituents:

Other:

SECTION IV - FIRE AND EXPLOSION DATA

UNLESS OTHERWISE NOTED, NONE. Product is a refractory.

NOTES:

SECTION V - HEALTH HAZARD DATA*

*SEE CHECKED BLOCKS		EXPOSURE REQUIRED	
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM
<input type="checkbox"/> Free Crystalline Silica	Delayed lung fibrosis - silicosis	✓	
<input type="checkbox"/> Coal Tar Products	Skin, lung, mucous membrane carcinogen	✓	
	Skin irritation; photosensitization		✓
<input type="checkbox"/> Petroleum Pitch	(Same as Coal Tar Products)		
<input type="checkbox"/> Lime	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/> Phosphoric Acid	Primary irritant - skin, eyes, etc.		✓
<input type="checkbox"/> Sodium Silicate	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/>			
<input type="checkbox"/>			

EMERGENCY OR FIRST AID PROCEDURES:

- ☐ Irritants: Wash from skin or flush from eyes using copious amounts of water.
- ☐ Coal Tar Products: Remove from skin by washing with soap and water. DO NOT use solvents. Same for petroleum pitch.
- ☐ Other:

SECTION VI - REACTIVITY DATA

STABILITY: <input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE Incompatibility (materials to avoid): Hazardous decomposition products: Hazardous Polymerization: <input type="checkbox"/> may occur <input checked="" type="checkbox"/> will not occur	COMMENTS:
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SECTION VII - SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

COMMENTS:

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (CHECK TYPE): ☒ Approved Dust ☐ Other (Specify):
VENTILATION: Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits
PROTECTIVE GLOVES (CHECK TYPE): ☐ Acid Resistant ☐ Impermeable ☒ Abrasion Resistant ☐ Other (Specify):
EYE PROTECTION: Approved safety glasses, goggles or faceshields should be used when handling refractory products.
FOOT PROTECTION (CHECK TYPE): ☒ Metatarsal safety ☐ Impermeable
PROTECTIVE CLOTHING (SPECIFY):

SECTION IX - SPECIAL PRECAUTIONS

- ☐ If block is checked, product contains coal tar products. Workers should not be exposed to furnace "burn-in" volatiles.
- ☐ Other (Specify):

5/13/91 MATERIAL SAFETY DATA SHEET

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO. 65265
TELEPHONE NUMBER -- 314-473-3626

SECTION I

PRODUCT NAME: SUPER G SUPER G J SUPER-G-CC (Canada)
SUPER G Plus SUPER G J Plus
PRODUCT TYPE: Plastic Refractory
CHEMICAL FAMILY: SiO₂ = 43-46%, Al₂O₃ = 49-52% **FORMULA:** Not applicable
Fe₂O₃ = 1-3%, TiO₂ = 1-3%
Na₂O = 1%

NOTE: The above listed products differ in one or more physical characteristics but are chemically equivalent. Information given in Sections II through IX of this Material Safety Data Sheet applies to each product listed.

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL	TLV-TWA	CAS #
Quartz (SiO ₂) (1-4%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Cristobalite (SiO ₂) (3-10%)	0.05 mg/m ³ * Respirable Dust	14464-46-1

*Source: American Conference of Governmental Industrial Hygienists, 1990-1991.

SECTION III

PHYSICAL DATA

SOLUBILITY IN WATER: Slight
SPECIFIC GRAVITY: 2.6
MELTING POINT: Not Applicable
APPEARANCE AND ODOR: Buff to gray granular solid; no odor

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None
EXTINGUISHING MEDIA: Not Combustible
SPECIAL FIRE FIGHTING PROCEDURES: None Known.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V

HEALTH HAZARD DATA

EFFECT OF OVEREXPOSURE:

EYES ACUTE: Dust or aggregate particles can cause mechanical irritation.
CHRONIC: None known.
SKIN ACUTE: Can cause mechanical abrasion.
CHRONIC: None known.
INHALATION ACUTE: Dust, if present, may cause upper respiratory irritation.
CHRONIC: Dust may cause lung damage if inhaled on a long-term basis.
INGESTION ACUTE: Unknown.
CHRONIC: Unknown.

MATERIAL SAFETY DATA SHEET

Date: 04/03/98

Nos. 5740, 4734

A. P. GREEN REFRACTORIES, INC.
and Subsidiaries
GREEN BOULEVARD, MEXICO, MO 65265

Emergency Telephone Number — Call 573-473-3626
 Transportation Emergencies — Contact CHEMTREC at 800-424-9300
 International Emergencies — Contact CHEMTREC at 703-527-3887
 Health Emergencies — Contact Your Local Poison Center

SECTION I

PRODUCT NAME: GREENCAST®-19-L CASTABLE MIX 219
 GREENCAST®-19-L Plus CASTABLE MIX 219 Plus

PRODUCT TYPE: Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY: SiO₂ = 22-26% Al₂O₃ = 28-32% **FORMULA:** Not Applicable
 CaO = 20-23% Fe₂O₃ = 11-12%
 MgO = 10-11%

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Vermiculite (35-45%)	10 mg/m ³ * Total Dust	1318-00-9
Diatomaceous Earth (< 5%)	10 mg/m ³ * Total Dust	61790-53-2
Quartz (SiO ₂) (< 2%)	0.1 mg/m ³ * Respirable Dust	14808-60-7
Refractory Cement (45-55%)	None (See Section IV)	12005-57-1

*Source: American Conference of Governmental Industrial Hygienists, 1997.

SECTION III

HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV **FIRST AID MEASURES**

EFFECT OF OVEREXPOSURE:

<u>EYES:</u>	ACUTE:	Dust can cause mechanical irritation. Product's cement can cause eye irritation.
	CHRONIC:	None Known
<u>SKIN:</u>	ACUTE:	Product's cement can cause skin irritation.
	CHRONIC:	None Known
<u>INHALATION:</u>	ACUTE:	Dust generated can cause breathing discomfort or irritation.
	CHRONIC:	Long-term exposure to dust may cause lung damage.
<u>INGESTION:</u>	ACUTE:	Unknown
	CHRONIC:	Unknown

FIRST AID MEASURES:

EYES: Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN: Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION: Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES: None

EXTINGUISHING MEDIA: Not Combustible

FIRE FIGHTING INSTRUCTIONS: No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

SECTION VII
HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

SECTION VIII
EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Gray, Granular Mixture		
BOILING POINT:	Not Applicable	pH:	9-11
SOLUBILITY IN WATER:	None	ODOR:	None
SPECIFIC GRAVITY:	0.5	MELTING POINT:	Not Applicable

SECTION X
STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI
TOXICOLOGICAL INFORMATION

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII
ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

SECTION XIV
TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated
Canadian TDG Hazard Class & PIN: Not Regulated

SECTION XV
REGULATORY INFORMATION

TSCA Status: All Components Listed
Canadian DSL: All Components Listed -
SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI
OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 09/26/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Refractories, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Larry L. Lorensen
Quality Engineer
Phone: 573-473-3427

JH:\MSDS\CURRENT\GC19L048

A. P. GREEN INDUSTRIES, INC.
GREEN BOULEVARD, MEXICO, MO. 65265
TELEPHONE NUMBER -- 314-473-3626

SECTION I

PRODUCT NAME: G-20, G-23, R-8023, R-8024
PRODUCT TYPE: Insulating Refractory Bricks or Shapes

CHEMICAL FAMILY: SiO₂ = 54-59% Al₂O₃ = 33-40%
Fe₂O₃ = 1-2% Na₂O = 1-2%

FORMULA: Not Applicable

SECTION IIPRODUCT HAZARDOUS INGREDIENTS

<u>CHEMICAL</u>	<u>TLV-TWA</u>	<u>CAS #</u>
Cristobalite (SiO ₂)*	0.05 mg/m ³ ** Respirable Dust	14464-46-1
Quartz (SiO ₂)*	0.1 mg/m ³ ** Respirable Dust	14808-60-7

* Not mechanically separate from each other or from other mineralogical phases in product as supplied.

** Source: American Conference of Governmental Industrial Hygienists, 1991-1992.

SECTION IIIPHYSICAL DATA

SOLUBILITY IN WATER: None VOLATILES BY VOLUME (%): None
SPECIFIC GRAVITY: 1.6-1.9 MELTING POINT: Not Applicable
APPEARANCE AND ODOR: Buff solid; no odor

SECTION IVFIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None
EXTINGUISHING MEDIA: Not Combustible
SPECIAL FIRE FIGHTING PROCEDURES: None
UNUSUAL FIRE AND EXPLOSION HAZARDS: None known

SECTION VHEALTH HAZARD DATAEFFECT OF OVEREXPOSURE:

EYES ACUTE: Dust or chips can cause mechanical irritation.
CHRONIC: None known.

SKIN ACUTE: Can cause mechanical abrasion or cuts.
CHRONIC: None known.

INHALATION ACUTE: Dust, if present, may cause upper respiratory irritation.
CHRONIC: Dust may cause lung damage if inhaled on a long-term basis.

INGESTION ACUTE: Unknown.
CHRONIC: Unknown.

SECTION V (CONTINUED)

EMERGENCY AND FIRST AID PROCEDURES:

<u>EYES</u>	Immediately flush with water for 15 minutes. Consult physician if irritation occurs.
<u>SKIN</u>	Treat abrasions or cuts using normal first aid procedures.
<u>INHALATION</u>	Remove to fresh air. Seek medical attention.
<u>INGESTION</u>	Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

SECTION VI

REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY: None known.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION VII

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: For broken shapes or fragments, sweep, shovel up, or pick up.

WASTE DISPOSAL METHOD: Can be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

SECTION VIII

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when cutting or when removing this product after service.

VENTILATION: General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn. Entry of chips into the eyes is a serious hazard, and eye protection should be worn at all times.

OTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from cuts or skin abrasion. Safety shoes should be worn to protect feet from accidentally dropped bricks or shapes.

SECTION IX

SPECIAL PRECAUTIONS

Warning: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith
Title: Senior Technical Consultant
Phone: (314) 473-3592



RIVERGATE LIME PLANT

Portland, Oregon

Lime Products

Calcium Oxide (Quicklime, Pebble Lime)

A highly reactive product, averaging over 94% calcium oxide. Available in an assortment of sizes for a wide range of applications. Available in bulk, super sacks, and 50 lb., multiwall paper bags with plastic moisture barrier film.

Calcium Hydroxide (Hydrated Lime, Kemilime[®], Snowflake[®])

A high purity, finely processed product, 99% of which will pass through a 200 mesh screen. It is air separated to eliminate grit. Low moisture content (< 1%) prevents caking. Shipped in bulk, supersacks and in 10 lb., 35 lb., or 50 lb. Bags. Three-ply paper bags, can be ordered with, or without, a plastic liner for extra protection.

Ground Limestone (Calcium Carbonate, Limestone Flour)

A finely ground, low moisture product. For use in chemical, industrial, environmental and agricultural applications where high calcium content is required. Available in bulk.

Agricultural Lime (Calcium Carbonate)

A finely ground, low moisture product, which exhibits a higher pH than ground limestone and yields quicker neutralizing ability. For use in chemical, industrial, and agricultural applications where high calcium content is required. Available in bulk.

Ground Dolomite

A finely ground, low moisture product, for applications which require a high magnesium content. For use in chemical, industrial, and agricultural applications where high calcium content is required. Available in bulk.

Dolomitic Rock

Crushed, commercial grade dolomite. Typically 44% $MgCO_3$ and 56% $CaCO_3$. Available in bulk.

Commercial Limestone

A high calcium grade of sized commercial limestone. For use in construction and building, chemical, iron and steel markets. Available in bulk.



RIVERGATE LIME PLANT

Portland, Oregon

Typical Analysis Data Sheet

Calcium Oxide (Quicklime)

Chemical Properties

Reactivity (1:4 lime to water ratio)

30 second temperature rise	40 °C
3 minute temperature rise	56 °C
Total temperature rise	58 °C

		Percent by Weight
Calcium Oxide, Available	CaO	94.1
Calcium Oxide, Total	CaO	96.7
Magnesium Oxide	MgO	1.07
Silicon Dioxide	SiO ₂	1.11
Aluminum Oxide	Al ₂ O ₃	0.32
Ferric Oxide	Fe ₂ O ₃	0.41
Sulfur (as SO ₃)		0.23
Sodium Oxide	Na ₂ O	0.07
Potassium Oxide	K ₂ O	0.05
Manganese Oxide	MnO	0.029
Total acid insoluble		0.55
Loss On Igniton @ 1000 °C		1.5

** Product meets all ASTM and AWWA requirements. **

Calcium Oxide (Quicklime)

Physical Properties

3/4" x 3/8" Calcium Oxide (Screened Pebble Quicklime)

	Percent Passing
US 3/4"	96.3
US 5/8"	80.0
US 1/2"	42.9
US 3/8"	19.0
US 1/4"	3.5
US 1/8"	2.0
Bulk Density	60.8 lbs./ft. ³

3/4" x 3/8" Calcium Oxide (Pebble Quicklime)

	Percent Passing
US 3/4"	96.8
US 5/8"	86.1
US 1/2"	63.4
US 3/8"	30.9
US 1/4"	14.7
US 1/8"	9.5
Bulk Density	68.6 lbs./ft. ³

3/8" x 1/8" Calcium Oxide (Quicklime)

	Percent Passing
US 3/8"	99.8
US 1/4"	61.7
US 1/8"	12.6
Bulk Density	60.7 lbs./ft. ³

1/8" Minus Calcium Oxide (Quicklime)

	Nominal	Percent Passing
US No. 6	0.132"	100.0
US No. 12	0.0661"	88.3
US No. 20	0.0331"	68.8
US No. 40	0.0165"	57.5
US No. 60	0.0098"	52.2
US No. 100	0.0059"	41.1
US No. 200	0.0029"	36.2
Apparent Loose Density		67.4 lbs./ft. ³
Apparent Packed Density		78.0 lbs./ft. ³

** Product meets all ASTM and AWWA requirements. **



RIVERGATE LIME PLANT

Portland, Oregon

Typical Analysis Data Sheet

Calcium Hydroxide (Hydrated Lime)

Chemical Properties (weight percent)

Available Calcium Hydroxide; $\text{Ca}(\text{OH})_2$	97.0
Equivalent Calcium Oxide; CaO	73.4
Free Calcium Oxide	0.73
Chemically Combined Water	23.6
Mechanical Moisture	0.63

Physical Properties

Blaine Fineness	16,907 cm^2/g
Percent Passing US #200	99.29
Percent Passing US #325	93.59
Apparent Loose Density	22.52 lbs/ft^3
Apparent Packed Density	36.30 lbs/ft^3

**** Product meets all ASTM and AWWA requirements. ****

Calcium Hydroxide (Hydrated Lime)

Typical Analysis Data Sheet

Chemical Properties - TRACE ANALYSIS

Aluminum Oxide	Al ₂ O ₃	0.24	%
Calcium Carbonate	CaCO ₃	1.40	%
Carbon Dioxide	CO ₂	0.70	%
Calcium Sulphate	CaSO ₄	0.02	%
Ferric Oxide	Fe ₂ O ₃	0.05	%
Magnesium Hydroxide	Mg(OH) ₂	0.26	%
Silicon Dioxide	SiO ₂	0.60	%
Sulfur (as SO ₃)		0.01	%
Arsenic	As	6	ppm
Beryllium	Be	0.4	ppm
Cadmium	Cd	< 0.5	ppm
Chromium	Cr	1.1	ppm
Copper	Cu	10	ppm
Fluorine	F	55	ppm
Lead	Pb	< 2	ppm
Manganese	Mn	120	ppm
Mercury	Hg	< 0.25	ppm
Nickel	Ni	1.2	ppm
Selenium	Se	< 5	ppm
Zinc	Zn	42	ppm

**** Product meets all ASTM and AWWA requirements. ****



RIVERGATE LIME PLANT

Portland, Oregon

Typical Analysis Data Sheet

Ground Limestone (Calcium Carbonate, Limestone Flour)

Chemical Properties (weight percent)

Calcium Carbonate	CaCO ₃	91.7
Magnesium Oxide	MgCO ₃	3.09
Silicon Dioxide	SiO ₂	3.36
Aluminum Oxide	Al ₂ O ₃	0.45
Ferric Oxide	Fe ₂ O ₃	0.55
Sulfur (as SO ₃)		0.34
Sodium Oxide	Na ₂ O	0.04
Potassium Oxide	K ₂ O	0.09
Manganese Oxide	MnO	0.016
Calcium Carbonate Equivalent		97.8 %
Moisture Content		0.40 %
Oregon Lime Score		95
pH		7.5 - 8.5

Physical Properties

Passing US # 10	100 %
Passing US # 20	99 %
Passing US # 40	98 %
Passing US # 100	95 %
Passing US # 200	89 %
Apparent Loose Density	74 lbs./ft ³
Apparent Packed Density	98 lbs./ft ³



RIVERGATE LIME PLANT

Portland, Oregon

Typical Analysis Data Sheet

Agricultural Lime

Chemical Properties (weight percent)

Calcium Carbonate	CaCO_3	90 - 100
Calcium Oxide	CaO	0 - 10
Calcium Hydroxide	Ca(OH)_2	0 - 10
Magnesium Oxide	MgCO_3	3.09
Silicon Dioxide	SiO_2	3.36
Aluminum Oxide	Al_2O_3	0.45
Ferric Oxide	Fe_2O_3	0.55
Sulfur (as SO_3)		0.34
Sodium Oxide	Na_2O	0.04
Potassium Oxide	K_2O	0.09
Manganese Oxide	MnO	0.016
Calcium Carbonate Equivalent		97.8 %
Moisture Content		0.40 %
Oregon Lime Score		94
pH		8 - 12.4

Physical Properties

Passing US # 10	100 %
Passing US # 20	98 %
Passing US # 40	93 %
Apparent Loose Density	74 lbs./ft ³
Apparent Packed Density	98 lbs./ft ³



RIVERGATE LIME PLANT

Portland, Oregon

Typical Analysis Data Sheet

Ground Dolomite

Chemical Properties (weight percent)

Calcium Carbonate	CaCO ₃	55
Magnesium Carbonate	MgCO ₃	44
Silicon Dioxide	SiO ₂	1.74
Aluminum Oxide	Al ₂ O ₃	0.42
Ferric Oxide	Fe ₂ O ₃	0.28
Sulfur (as SO ₃)		0.00
Sodium Oxide	Na ₂ O	0.02
Potassium Oxide	K ₂ O	0.00
Calcium Carbonate Equivalent		104 %
Moisture Content		0.27 %
Oregon Lime Score		102
pH		8

Physical Properties

Passing US # 10	100 %
Passing US # 20	99 %
Passing US # 40	95 %
Apparent Loose Density	85 lbs./ft ³
Apparent Packed Density	142 lbs./ft ³



RIVERGATE LIME PLANT

Portland, Oregon

Typical Analysis Data Sheet

Dolomitic Rock

Chemical Properties (weight percent)

Calcium Carbonate	CaCO ₃	55
Magnesium Carbonate	MgCO ₃	44
Silicon Dioxide	SiO ₂	1.74
Aluminum Oxide	Al ₂ O ₃	0.42
Ferric Oxide	Fe ₂ O ₃	0.28
Sulfur (as SO ₃)		0.00
Sodium Oxide	Na ₂ O	0.02
Potassium Oxide	K ₂ O	0.00
Calcium Carbonate Equivalent		104 %
pH		8

Physical Properties

Passing US 5/8"	100 %
Passing US 1/2"	99.8 %
Passing US 3/8"	92.6 %
Passing US 1/4"	43.0 %
Passing US 1/8"	17.5 %
Bulk Density	97.5 lbs./ft ³



RIVERGATE LIME PLANT

Portland, Oregon

Typical Analysis Data Sheet

Commercial Limestone (Chemical Grade Calcium Carbonate)

Chemical Properties (weight percent)

Calcium Carbonate	CaCO ₃	98.3
Magnesium Oxide	MgO	0.46
Silicon Dioxide	SiO ₂	0.62
Aluminum Oxide	Al ₂ O ₃	0.18
Ferric Oxide	Fe ₂ O ₃	0.23
Sulfur (as SO ₃)		0.14
Sodium Oxide	Na ₂ O	0.04
Potassium Oxide	K ₂ O	0.03
Manganese Oxide	MnO	0.016

Physical Properties

Loss On Ignition	43.3 %
Bulk Density	90 lbs/ft ³

Large Limestone Sizing

Percent Passing US 2 1/2"	100 %
Percent Passing US 1"	10 %

Small Limestone Sizing

Percent Passing US 1"	100 %
Percent Passing US 3/8"	10 %

For Coating, Resins, and Related Materials NPCA 1-84
 Manufacturer's Name Emergency Telephone No.
 BENJAMIN MOORE & CO. 800-424-9300 (CHEMTREC)
 51 CHESTNUT RIDGE RD
 MONTVALE, NJ 07645

For the most up-to-date MSDS information
please visit our website www.benjaminmoore.com/msds/go.html

BOILING RANGE: N/A WT/GALLON: 9.1 to 10.1 %VOL BY VOLUME: 71.7 to 72.1
EVAPORATION RATE: SLOWER THAN ETHER VAPOR DENSITY: HEAVIER THAN AIR

SECTION IV FIRE AND EXPLOSION HAZARD DATA

D.O.T. FLAMMABILITY CLASS.: NOT REGULATED FLASH POINT: > 250 F PMCC
LEL: Not Applicable
EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL WATER FOG
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Toxic gases may form when product burns.
Closed containers may burst if exposed to extreme heat or fire.
SPECIAL FIRE FIGHTING PROCEDURES:
Cool exposed containers with water. Use self-contained breathing apparatus.

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE - ACUTE:
Inhalation - Causes nose and throat irritation.
Contact - Causes eye irritation.
Ingestion of large amounts could cause serious injury.
EFFECTS OF OVEREXPOSURE - CHRONIC:
IARC has classified Carbon Black as possibly carcinogenic for humans (2B).
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE:
None expected when used in accordance with Safe Handling and Use
Information (Section VIII).
PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION INGESTION
EMERGENCY AND FIRST AID PROCEDURES :
Inhalation - Remove to fresh air. Get medical help for any breathing
difficulty.
Eye Contact - Flush thoroughly with water. Call physician.
Skin Contact - Wash with soap and water.
Ingestion - Drink 1 or 2 glasses of water to dilute.
DO NOT induce vomiting. Call physician.

SECTION VI REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION WILL NOT OCCUR
CONDITIONS TO AVOID: Elevated temperatures
HAZARDOUS DECOMPOSITION PRODUCTS:
Burning may produce carbon dioxide and carbon monoxide.
INCOMPATIBILITY (MATERIALS TO AVOID): None reasonably foreseeable.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Flush with water. Absorb with sawdust or rags.
WASTE DISPOSAL METHOD:
Conventional procedures in compliance with local, state and federal
regulations. Do not incinerate sealed containers.

SECTION VIII SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION:
Use NIOSH approved respirator specified for protection against paint spray
mist and sanding dust in restricted or confined areas.
VENTILATION:
Adequate to maintain working atmosphere below T.L.V. and L.E.L.

(See Sect. II for ingredient data and concentrations). Mechanical exhaust may be required in confined areas.

PROTECTIVE GLOVES: Waterproof during repeated contact.

EYE PROTECTION : Splash goggles or safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT: Clothing adequate to protect skin.

HYGIENIC PRACTICES:

Remove and wash clothing before reuse. Wash hands before eating, smoking or using the washroom.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Do not throw or drop containers.

OTHER PRECAUTIONS :

Avoid contact with eyes and prolonged contact with skin or breathing of spray mist or sanding dust.

Close container after each use. Keep out of reach of children. Do not take internally.

SECTION XX

HMIS (Hazardous Materials Identification System) (R) NPCA
HMIS is a recognized workplace Hazard Communications System as required by OSHA (29 CFR 1910.1200). Information on establishing a compliant hazardous communication program using HMIS is available from:

American Labelmark Co., Inc., Labelmaster Division
5724 N. Pulaski Rd., Chicago, IL 60646
1-800-621-5808

The ratings assigned by Benjamin Moore & Co. are only suggested ratings; the contractor/employer has ultimate responsibility for HMIS rating where this system is used.

PERSONAL PROTECTION: This code is left blank on Benjamin Moore & Co. MSDS's as it depends on application technique and the workplace ventilation.

Please read Sections II through IX of this MSDS before deciding on appropriate protective equipment and beginning work. There are codes available for this section which can be obtained from Labelmaster.

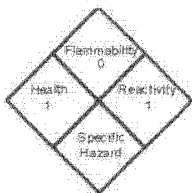
This product contains at least one toxic chemical listed in Section II that is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372.

DISCLAIMER

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

NOTICE: Removal of old paint by sanding, scraping or other means may generate dust or fumes which contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information,

contact the USEPA/Lead Information Hotline at 1-800-LEAD-FYI.



Calcium Oxide



Material Safety Data Sheet for Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900
Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime, unslaked lime

Trade Name and Synonyms: Pebble Quicklime, Cal-Max

CAS No.: 1305-78-8

Date Revised: July 2000

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	ACGIH TLV
Quicklime, CaO	1305-78-8	5 mg/m ³	2 mg/m ³
Quartz, crystalline silica	14808-60-7	PEL = $\frac{10\text{mg/m}^3}{\% \text{ SiO}_2^{*+2}}$	0.05 mg/m ³ *

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family: Inorganic Base **Evaporation Rate:** Not Applicable
Molecular Weight: 56.10
Boiling Point: 5162°C
Melting Point: 4737°F
Specific Gravity: 3.2-3.4
Vapor Density: (Air=1) Not Applicable
Solubility in Water: 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C
Appearance and Odor: White granular or powder; faint earthy odor

Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable **LEL:** Not Applicable **UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. **Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION:** Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. **Inhalation:** corrosive
 - a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. **Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
 - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
2. **Skin contact:** corrosive
 - a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact:** corrosive
 - a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
4. **Ingestion:** corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO
 Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES
 (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25°C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium oxide.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

D.O.T. FLAMMABILITY CLASS.: FLAMMABLE FLASH POINT: 91 F PMCC
LEL %: 1.0

EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL WATER FOG

UNUSUAL FIRE AND EXPLOSION HAZARDS:

During a fire, HDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Closed containers may explode when exposed to extreme heat or burst when contaminated with water (CO2 evolved).

SPECIAL FIRE FIGHTING PROCEDURES:

Cool exposed containers with water. Use self-contained breathing apparatus. Do not use water stream on burning liquid. Use self-contained breathing apparatus.

SECTION V HEALTH HAZARD DATA

IMPORTANT: Designed to be mixed with other components. The resulting material will have the hazards of all its components.

EFFECTS OF OVEREXPOSURE - ACUTE:

Inhalation - May be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.

Contact - Causes eye burns.

Contact - Causes skin burns.

Skin Absorption - Hazardous ingredients contained in this product have the capacity to be absorbed through the skin in sufficient quantities to cause systemic toxicity. See Safe Handling and Use Information (Section VIII).

Ingestion - Irritation of the digestive tract and nervous system depression (drowsiness, dizziness, loss of coordination and fatigue). Aspiration

Hazard - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Ingestion - Harmful if swallowed. Irritation of the digestive tract and nervous system depression (drowsiness, dizziness, loss of coordination and fatigue).

EFFECTS OF OVEREXPOSURE - CHRONIC:

Skin Contact - Prolonged or repeated exposure may cause dermatitis.

NOTICE: Reports have associated permanent brain and nervous system damage with repeated, prolonged overexposure to solvents among persons engaged in the painting trade. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

IARC has classified Ethyl Benzene as possibly carcinogenic for humans (2B). May cause allergic skin reaction.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE:

Asthma and other respiratory disorders, skin allergies and eczema.

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes and skin.

As a result of previous repeated overexposure or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to later exposure to isocyanate at levels well below the TLV. This increased lung sensitivity can persist for weeks and in some cases for several years. Chronic overexposure has been reported to cause lung damage and decreased lung function which may be permanent. HDI vapors or mist can irritate the mucous membranes. Persons with existing, nonspecific bronchial hyperactivity can respond to concentration below the TLV with similar symptoms as well as an asthma attack. Exposures above TLV may lead to bronchitis, bronchial spasm and pulmonary edema. These

effects are usually reversible.

Isocyanates react with skin protein and moisture and can cause irritation and may develop into dermatitis. Symptoms of skin irritation may be reddening, swelling, rash, scaling or blistering. Some persons may develop skin sensitization from contact.

PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION INGESTION

EMERGENCY AND FIRST AID PROCEDURES :

Inhalation - Remove from hazard area, maintain breathing, call physician.

Skin Contact - Remove with soap and water.

Eye Contact - Flush immediately with large amounts of water. Call physician

Ingestion - Drink 1 or 2 glasses of water to dilute.

DO NOT induce vomiting. Call physician.

SECTION VI REACTIVITY DATA

STABILITY: This product is stable under normal conditions.

HAZARDOUS POLYMERIZATION: May occur, contact with moisture or other materials which react with isocyanates or temperatures over 400 F may cause polymerization.

HAZARDOUS DECOMPOSITION PRODUCTS:

High heat and fire may produce carbon dioxide, carbon monoxide, oxides of nitrogen, HCN, HDI.

CONDITIONS TO AVOID: Elevated temperatures and build up of vapors

INCOMPATIBILITY (MATERIALS TO AVOID): Water, amines, strong bases, alcohols, metal compounds and surface active materials.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Remove all sources of ignition. Avoid breathing vapors. Use non-sparking tools to return materials to container. Absorb residue with Fullers earth.

WASTE DISPOSAL METHOD:

Conventional procedures in compliance with local, state and federal regulations. Do not incinerate sealed containers.

SECTION VIII SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION:

Wear a properly fitted respirator approved by NIOSH/MSHA during and after application. A positive-pressure, supplied air respirator (TC-19C) may be appropriate where airborne monitoring demonstrates vapor levels below ten times the applicable exposure limits.

VENTILATION:

Adequate to maintain working atmosphere below T.L.V. and L.E.L.

(See Sect. II for ingredient data and concentrations). Mechanical exhaust may be required in confined areas.

Discharge exhaust only in area away from ignition sources.

PROTECTIVE GLOVES: Solvent impermeable gloves are required.

EYE PROTECTION : Splash goggles or safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT: Clothing adequate to protect skin.

HYGIENIC PRACTICES:

Remove and wash clothing before reuse. Wash hands before eating, smoking or using the washroom.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. At storage temperatures above 122 F, material may slowly polymerize without hazard. Ideal storage temp. range is 50-81 F. Avoid contact with skin and eyes.

OTHER PRECAUTIONS :

If container is exposed to high heat, it can be pressurized and possibly rupture explosively. HDI reacts slowly with water to form CO₂ gas. This gas can cause sealed containers to expand and possibly rupture explosively. Keep out of reach of children. Do not take internally.

SECTION XX

HMIS (Hazardous Materials Identification System) (R) NPCA
HMIS is a recognized workplace Hazard Communications System as required by OSHA (29 CFR 1910.1200). Information on establishing a compliant hazardous communication program using HMIS is available from:

American Labelmark Co., Inc., Labelmaster Division
5724 N. Pulaski Rd., Chicago, IL 60646
1-800-621-5808

The ratings assigned by Benjamin Moore & Co. are only suggested ratings; the contractor/employer has ultimate responsibility for HMIS rating where this system is used.

PERSONAL PROTECTION: This code is left blank on Benjamin Moore & Co. MSDS's as it depends on application technique and the workplace ventilation. Please read Sections II through IX of this MSDS before deciding on appropriate protective equipment and beginning work. There are codes available for this section which can be obtained from Labelmaster.

This product contains at least one toxic chemical listed in Section II that is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372.

DISCLAIMER

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NOTICE: Removal of old paint by sanding, scraping or other means may generate dust or fumes which contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information, contact the USEPA/Lead Information Hotline at 1-800-LEAD-FYI.

For Coating, Resins, and Related Materials NPCA 1-84
Manufacturer's Name Emergency Telephone No.
BENJAMIN MOORE & CO. 800-424-9300 (CHEMTREC)
51 CHESTNUT RIDGE RD
MONTVALE, NJ 07645

Date Prepared	Last Rev Date	Information Telephone No.
01-19-01	09-05-00	201-573-9600

For the most up-to-date MSDS information
please visit our website www.benjaminmoore.com/msds/go.html

** HMIS CODE **

PRODUCT* : M46, nM46

HEALTH: 2*

CLASS: SOLVENT THINNED PAINT

FLAMMABILITY: 2

NAME: EPOXY MASTIC COATING CATALYST

REACTIVITY: 0

COLOR: ALL

PERSONAL PROT:

** SARA TITLE 312 **

ACUTE: Y CHRONIC: Y FIRE: Y PRESSURE: N REACTIVITY: N

For a complete description of HMIS and an explanation of the PERSONAL PROT: code, see Section XX.

*NOTE: In the PRODUCT code a little n can be any capital letter of the alphabet except P or Q.

SECTION II HAZARDOUS INGREDIENTS

INGREDIENT

HAZ	SARA	MAX %	CAS #	TLV	PEL	STEL	CEIL	MM Hg
Epoxy Resin								
Y	N	43.9	025068-38-6	N/E	N/E	N/E	N/E	N/A
2-Heptanone								
Y	N	2.0	000110-43-0	50 ppm	100 ppm	N/E	N/E	2.14 @ 6
Stoddard Solvent								
Y	N	2.2	008052-41-3	100 ppm	100 ppm	N/E	N/E	2.0 @ 20
Bentonite Clay								
Y	N	1.0	121888-66-2	.1 mg/M3	N/E	N/E	N/E	N/A
Zinc Phosphate								
Y	Y	7.3	007779-90-0	10 mg/M3	15 mg/M3	N/E	N/E	N/A
Aluminum Phosphate								
Y	N	3.4	007784-30-7	10 mg/M3	N/E	N/E	N/E	N/A
Wollastonite								
Y	N	10.0	013983-17-0	10 mg/M3	N/E	N/E	N/E	N/A
Xylene								
Y	Y	2.3	001330-20-7	100 ppm	100 ppm	150 ppm	N/E	21 @ 38C
Ethyl Benzene								
Y	N	.4	000100-41-4	100 ppm	100 ppm	125 ppm	N/E	10 @ 20C

Talc

Y	N	20.2	014807-96-6	2 mg/M3	2 mg/M3	N/E	N/E	N/A
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Butylated Urea-Formaldehyde Resin

Y	N	.5	068002-19-7	N/E	N/E	N/E	N/E	
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Propylene Glycol Monomethyl Ether

Y	N	4.6	000107-98-2	100 ppm	100 ppm	150 ppm	N/E	N/A
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 This product contains one or more reported carcinogens or suspected carcinogens which are noted NTP, IARC, or OSHA-Z in the other limits recommended column.

Note: This product contains pigments which may become a dust nuisance when removed by abrasive blasting, sanding, or grinding.
 This product may contain small amounts of materials known to the State of California to cause cancer and reproductive harm.

SECTION III PHYSICAL DATA

 BOIL RANGE: 117.0 to 343.0 WT/GL: 12.3 to 12.3 %VOL/VOL: 21.7 to 21.7
 EVAPORATION RATE: SLOWER THAN ETHER VAPOR DENSITY: HEAVIER THAN AIR

SECTION IV FIRE AND EXPLOSION HAZARD DATA

 D.O.T. FLAMMABILITY CLASS.: COMBUSTIBLE FLASH POINT: 102 F PMCC
 LEL %: 0.6
 EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL WATER FOG
 UNUSUAL FIRE AND EXPLOSION HAZARDS:
 Toxic gases may form when product burns.
 Closed containers may burst if exposed to extreme heat or fire.
 SPECIAL FIRE FIGHTING PROCEDURES:
 Cool exposed containers with water. Use self-contained breathing apparatus.
 Do not use water stream on burning liquid. Use self-contained breathing apparatus.

SECTION V HEALTH HAZARD DATA

 IMPORTANT: Designed to be mixed with other components. The resulting material will have the hazards of all its components.
 EFFECTS OF OVEREXPOSURE - ACUTE:
 Inhalation - Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea.
 Contact - Causes eye irritation.
 Contact - Causes skin irritation.
 Skin Absorption - Hazardous ingredients contained in this product have the capacity to be absorbed through the skin in sufficient quantities to cause systemic toxicity. See Safe Handling and Use Information (Section VIII).
 Ingestion - Irritation of the digestive tract and nervous system depression (drowsiness, dizziness, loss of coordination and fatigue). Aspiration Hazard - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.
 EFFECTS OF OVEREXPOSURE - CHRONIC:
 NOTICE: Reports have associated permanent brain and nervous system damage with repeated, prolonged overexposure to solvents among persons engaged in the painting trade. Intentional misuse by deliberately concentrating and

inhaling the contents may be harmful or fatal.

IARC has classified Ethyl Benzene as possibly carcinogenic for humans (2B).

May cause allergic skin reaction.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE:

None expected when used in accordance with Safe Handling and Use

Information (Section VIII).

PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION INGESTION

EMERGENCY AND FIRST AID PROCEDURES :

Inhalation - Remove from hazard area, maintain breathing, call physician.

Skin Contact - Remove with soap and water.

Eye Contact - Flush immediately with large amounts of water. Call physician

Ingestion - Drink 1 or 2 glasses of water to dilute.

DO NOT induce vomiting. Call physician.

SECTION VI REACTIVITY DATA

STABILITY: STABLE under normal conditions

HAZARDOUS POLYMERIZATION WILL NOT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS:

Burning may produce carbon dioxide and carbon monoxide.

CONDITIONS TO AVOID: Elevated temperatures and build up of vapors

INCOMPATIBILITY (MATERIALS TO AVOID): None reasonably foreseeable.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Remove all sources of ignition. Avoid breathing vapors. Use non-sparking tools to return materials to container. Absorb residue with Fullers earth.

WASTE DISPOSAL METHOD:

Conventional procedures in compliance with local, state and federal regulations. Do not incinerate sealed containers.

SECTION VIII SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION:

Wear a properly fitted vapor/particulate respirator approved by NIOSH for use with paints during application or sanding and until all vapors and spray mist are exhausted. In confined spaces or in situations where continuous spray operations are typical, or if proper respirator fit is not possible, wear a positive-pressure, supplied air respirator approved by NIOSH.

VENTILATION:

Adequate to maintain working atmosphere below T.L.V. and L.E.L.

(See Sect. II for ingredient data and concentrations). Mechanical exhaust may be required in confined areas.

Discharge exhaust only in area away from ignition sources.

PROTECTIVE GLOVES: Solvent impermeable gloves are required.

EYE PROTECTION : Splash goggles or safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT: Clothing adequate to protect skin.

HYGIENIC PRACTICES:

Remove and wash clothing before reuse. Wash hands before eating, smoking or using the washroom.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Flammable - Keep away from heat, sparks and flames.

OTHER PRECAUTIONS :

Use only with adequate ventilation. Avoid prolonged contact with skin and breathing of vapor spray mist or sanding dust.
Close container after each use. Keep out of reach of children. Do not take internally.

SECTION XX

HMIS (Hazardous Materials Identification System) (R) NPCA
HMIS is a recognized workplace Hazard Communications System as required by OSHA (29 CFR 1910.1200). Information on establishing a compliant hazardous communication program using HMIS is available from:

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1-800-621-5808

The ratings assigned by Benjamin Moore & Co. are only suggested ratings; the contractor/employer has ultimate responsibility for HMIS rating where this system is used.

PERSONAL PROTECTION: This code is left blank on Benjamin Moore & Co. MSDS's as it depends on application technique and the workplace ventilation. Please read Sections II through IX of this MSDS before deciding on appropriate protective equipment and beginning work. There are codes available for this section which can be obtained from Labelmaster. This product contains at least one toxic chemical listed in Section II that is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372.

DISCLAIMER

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

NOTICE: Removal of old paint by sanding, scraping or other means may generate dust or fumes which contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information, contact the USEPA/Lead Information Hotline at 1-800-LEAD-FYI.

ASH GROVE CEMENT COMPANY



RIVERGATE LIME PLANT — WESTERN REGION

13939 N. RIVERGATE BLVD.
PORTLAND, OREGON 97203
PHONE 503-286-1677
FAX 503-289-2272

Dolomitic Rock

Typical Analysis Data Sheet

Chemical Properties (weight percent)

Calcium Carbonate	CaCO_3	55
Magnesium Carbonate	MgCO_3	44
Silicon Dioxide	SiO_2	1.74
Aluminum Oxide	Al_2O_3	0.42
Ferric Oxide	Fe_2O_3	0.28
Sulfur (as SO_3)		0.00
Sodium Oxide	Na_2O	0.02
Potassium Oxide	K_2O	0.00
Calcium Carbonate Equivalent		104 %
pH		8

Physical Properties

Passing US 5/8"	100 %
Passing US 1/2"	99.8 %
Passing US 3/8"	92.6 %
Passing US 1/4"	43.0 %
Passing US 1/8"	17.5 %
Bulk Density	97.5 lbs./ft ³

**MATERIAL SAFETY DATA SHEET**

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 1/6

Printing date 07/02/2001

Reviewed on 05/07/2001

1 Identification of substance· **Product details**· **Trade name:** SUPER HYBOND PLUS· **Manufacturer/Supplier:**RHI Refractories America
600 Grant Street
Pittsburgh, PA 15219

Phone: (412) 562-6200

· **Information department:** MSDS Technical Information: (412) 562-6437· **Emergency information:** CHEMTREC 24 HOUR EMERGENCY PHONE NUMBER: 1-800-424-9300.**2 Composition/Data on components**· **Chemical characterization**· **Description:** Mixture of the substances listed below with nonhazardous additions.· **Components:**

1302-93-8	alumina silicate	30-60%
14464-46-1	crystalline silica (cristobalite)	10-20%
1302-87-0	hydrous alumina silicate	10-20%
1302-76-7	alumina silicate (kyanite)	5-10%
14808-60-7	crystalline silica (quartz)	5-10%
10043-01-3	aluminum sulphate	2.5-5%
	organic fibers	0.1-0.5%

3 Hazards identification· **Hazard description:**

Toxic

· **Medical conditions aggravated by exposure to the product:** Asthma, chronic lung disease, and skin irritation.· **Carcinogenicity Information:**

Crystalline silica is listed by IARC as a Group 1 Carcinogen "sufficient evidence of carcinogenicity in humans", and is listed by NTP as K, "Known To Be A Human Carcinogen".

· **Information pertaining to particular dangers for man and environment:**

May cause cancer by inhalation.

Danger of serious damage to health by prolonged exposure.

PRODUCT CONTAINS CRYSTALLINE SILICA, "a chemical known to the State of California to cause cancer."
Prolonged or repeated inhalation of dust from products containing crystalline silica can cause silicosis or cancer.· **NFPA ratings (scale 0-4)**

Health = 0

Fire = 0

Reactivity = 0

(Contd. on page 2)

USA

**MATERIAL SAFETY DATA SHEET**

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 2/6

Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: **SUPER HYBOND PLUS****HMIS Classification**

(Contd. from page 1)

HEALTH	0	Health: *0
FIRE	0	Flammability: 0
REACTIVITY	0	Reactivity: 0

4 First aid measures

- *After inhalation:* Move to fresh air; consult doctor if needed.
- *After skin contact:* Immediately wash with water and soap and rinse thoroughly.
- *After eye contact:* Rinse opened eye for several minutes under running water.
- *After swallowing:*
This product is intended for industrial applications; in the unlikely event that this product is swallowed, consult a physician if any adverse medical conditions occur.

5 Fire fighting measures

- *Suitable extinguishing agents:* Use fire fighting measures that suit the environment.
- *Protective equipment:* No special measures required.

6 Accidental release measures

- *Person-related safety precautions:* Not required.
- *Measures for environmental protection:* No special measures required.
- *Measures for cleaning/collecting:*
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

7 Handling and storage

- *Handling:*
 - *Information for safe handling:*
Ensure good ventilation/exhaust at the workplace.
Prevent formation of dust.
 - *Information about protection against explosions and fires:* Keep respiratory protective device available.
- *Storage:*
 - *Requirements to be met by storerooms and containers:* No special requirements.
 - *Information about storage in one common storage facility:* Not required.
 - *Further information about storage conditions:* Store product inside, out of extreme weather conditions.
- *Storage class:*
 - *Class according to regulation on flammable liquids:* Not applicable

USA

(Contd. on page 3)

RHI

Refractories
AMERICA

MATERIAL SAFETY DATA SHEET

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 3/6

Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: **SUPER HYBOND PLUS**

(Contd. from page 2)

8 Exposure controls and personal protection

Components with limit values that require monitoring at the workplace:

14464-46-1 crystalline silica (cristobalite)

ACGIH TLV 0.05 R mg/m³

NIOSH REL 0.05* mg/m³

*Respirable dust

OSHA PEL 1/2 the value calculated from the respirable dust

14808-60-7 crystalline silica (quartz)

ACGIH TLV 0.05 R mg/m³

NIOSH REL 0.05* mg/m³

*Respirable dust

OSHA PEL Short-term value: 10** mg/m³

Long-term value: 30* mg/m³

as SiO₂; *Total dust **Respirable dust

10043-01-3 aluminum sulphate

ACGIH TLV 2 mg/m³

as Al

NIOSH REL 2 mg/m³

as Al

Personal protective equipment:

General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Breathing equipment:



NIOSH approved respirators should be used if dust is present. A respiratory protection program should be implemented if exposures exceed OSHA PELs.

Protection of hands:



Protective gloves recommended

Eye protection: Safety glasses with side shields recommended

9 Physical and chemical properties

Form: Solid

Color: According to product specification

Odor: No specific odor.

Change in condition

Melting point/Melting range: Undetermined.

Boiling point/Boiling range: Undetermined.

(Contd. on page 4)

USA



MATERIAL SAFETY DATA SHEET

Harrison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

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Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: SUPER HYBOND PLUS

(Contd. from page 3)

· Flash point:	Not applicable.
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Density:	Not determined.
· Solubility in / Miscibility with Water:	Insoluble.

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Dangerous reactions** No dangerous reactions known.
- **Dangerous products of decomposition:**
Refractories containing crystalline silica may, after service, contain more or less crystalline silica. Care must be taken to avoid and/or control dust from demolition. If in doubt of the proper protection, seek advice from a safety professional.

11 Toxicological information

- **Acute toxicity:**
- **Primary acute effects:**
- **Skin contact:** No irritant effect.
- **Eye contact:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Carcinogenic if inhaled.

12 Ecological information

- **General notes:** At present there are no ecotoxicological assessments.

13 Disposal considerations

- **Recommendation for Disposal of Product:**
As sold, this product is not RCRA hazardous. Final used condition must be evaluated prior to disposal. Dispose of waste product in accordance with Federal, State and Local regulations.
Dust created during demolition of used product may contain crystalline silica.
- **Recommendation for Disposal of Uncleaned Packaging:** Reuse, recycle or treat as industrial waste.

USA

(Contd. on page 5)



MATERIAL SAFETY DATA SHEET

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 5/6

Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: **SUPER HYBOND PLUS**

(Contd. from page 4)

14 Transport information

· *Transport/Additional information: Not dangerous according to available information.*

15 Regulations· **SARA 313 TOXIC CHEMICALS**

No material listed in the components in Section 2 of this MSDS is on the SARA 313 list.

· **SARA 302 EXTREMELY HAZARDOUS SUBSTANCES**

No material listed in the components in Section 2 of this MSDS is on the SARA 302 list.

· **TSCA (Toxic Substances Control Act)**

This substance or all the ingredients of this product are on the Chemical Substances Inventory of the Toxic Substances Control Act (TSCA Inventory). The presence on this list does not require any legal reporting.

· **WHMIS Classification**

Class D - Division 2 - Sub Division A

Untested mixture containing a very toxic material

Class D - Division 2 - Sub Division B

Untested mixture containing a toxic material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

· **Classification according to EU-guidelines**· **Hazard symbols:**

Toxic

· **Hazard-determining components of labeling:**

crystalline silica (cristobalite)

crystalline silica (quartz)

· **Risk phrases:**

May cause cancer by inhalation.

Danger of serious damage to health by prolonged exposure.

· **Safety phrases:**

When using do not eat or drink.

Do not breathe dust.

After contact with skin, wash immediately with plenty of soap and water

Wear suitable protective clothing and gloves.

In case of accident or if you feel unwell, seek medical advice immediately.

· **Special labeling of certain preparations:**

*PRODUCT CONTAINS CRYSTALLINE SILICA, "a chemical known to the State of California to cause cancer."
Prolonged or repeated inhalation of dust from products containing crystalline silica can cause silicosis or cancer.*

· **National regulations:**· **The following ingredients are known in the state of California to be a cancer risk (Proposition 65):**

14464-46-1 crystalline silica (cristobalite)

14808-60-7 crystalline silica (quartz)

USA

(Contd. on page 6)

**MATERIAL SAFETY DATA SHEET**

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 6/6

Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: SUPER HYBOND PLUS

(Contd. from page 5)

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Contact:

Patricia A. Kott 412-469-6123

Michael G. Lukart 412-469-6186

Creation date: 08/14/2000

USA



MATERIAL SAFETY DATA SHEET

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 1/6

Printing date 08/07/2001

Reviewed on 06/05/2001

1 Identification of substance

- **Product details**
- **Trade name:** INSWOOL-HP BLANKET 8#
- **Manufacturer/Supplier:**
RHI Refractories America
600 Grant Street
Pittsburgh, PA 15219
- **Phone:** (412) 562-6200
- **Information department:** MSDS Technical Information: (412) 562-6437
- **Emergency information:** CHEMTREC 24 HOUR EMERGENCY PHONE NUMBER: 1-800-424-9300.

2 Composition/Data on components

- **Chemical characterization:**
- **CAS No. Description**
142844-00-6 refractory ceramic fibers (RCF)
- **Chemical characterization**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

• **Components:**

142844-00-6 refractory ceramic fibers (RCF)	60-100%
---	---------

• **Additional information:**

*This product contains Refractory Ceramic Fibers (RCF) or an RCF wrap or mat. IARC has classified RCFs as a possible human carcinogen, Group 2B. This classification was based on sufficient evidence of carcinogenicity in animals and no available data in humans. NTP classified respirable RCFs as reasonably anticipated carcinogens. Recent industry ongoing epidemiology studies show the general health of workers in the RCF industry was similar to that of workers in other dusty work environments. There have been no reports of mesothelioma, and the lung cancer rate appears similar to background rates, but the number of workers with a long latency period are too few for definitive conclusions. There was a small number of employees with an increased risk of developing pleural plaques (shadows along the inside of the chest wall). These plaques, however, are not known to cause symptoms or disability. RHI recommends that safe handling methods are followed, including air monitoring in areas wherever the potential exists for airborne fibers, minimizing airborne exposures through use of NIOSH approved respirators, and wearing protective clothing, gloves and eye protection.

3 Hazards identification

- **Hazard description:**
Toxic
- **Medical conditions aggravated by exposure to the product:** Asthma, chronic lung disease, and skin irritation.
- **Carcinogenicity Information:**
Refractory ceramic fibers are listed by IARC as Group 2B "Possibly Carcinogenic to Humans."
- **Information pertaining to particular dangers for man and environment:**
May cause cancer.

(Contd. on page 2)

USA



MATERIAL SAFETY DATA SHEET

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 2/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

(Contd. from page 1)

Irritating to eyes and respiratory system.

PRODUCT MAY CONTAIN REFRACTORY CERAMIC FIBERS (RCF) OR INCLUDE A WRAP OR MAT WHICH CONTAINS RCF:

Prolonged or repeated inhalation of RCF dust may cause cancer.

Exposure of the product to high temperature may convert fibers to crystalline silica, an IARC and NTP listed carcinogen which can cause silicosis or cancer.

Use with adequate ventilation, wear safety glasses and dust-type respirator if dust is present.

In case of inhalation, remove victim to fresh air.

In case of eye contact, flush with water for 15 minutes.

· NFPA ratings (scale 0-4)



Health = 1

Fire = 0

Reactivity = 0

· HMIS Classification

HEALTH	1
FIRE	0
REACTIVITY	0

Health: *1

Flammability: 0

Reactivity: 0

4 First aid measures

· After inhalation: Move to fresh air; consult doctor if needed.

· After skin contact: Immediately wash with water and soap and rinse thoroughly.

· After eye contact: Flush eyes with water for 15 minutes. If irritation persists, consult a doctor.

· After swallowing:

This product is intended for industrial applications; in the unlikely event that this product is swallowed, consult a physician if any adverse medical conditions occur.

5 Fire fighting measures

· Suitable extinguishing agents: Use fire fighting measures that suit the environment.

· Protective equipment: No special measures required.

6 Accidental release measures

· Person-related safety precautions: Not required.

· Measures for environmental protection: No special measures required.

· Measures for cleaning/collecting:

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

USA

(Contd. on page 3)



MATERIAL SAFETY DATA SHEET

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 3/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

(Contd. from page 2)

7 Handling and storage

- **Handling:**
 - *Information for safe handling:* Prevent formation of dust.
 - *Information about protection against explosions and fires:* No special measures required.
- **Storage:**
 - *Requirements to be met by storerooms and containers:* No special requirements.
 - *Information about storage in one common storage facility:* Not required.
 - *Further information about storage conditions:* Store product inside, out of extreme weather conditions.
- **Storage class:**
 - *Class according to regulation on flammable liquids:* Not applicable

8 Exposure controls and personal protection

- **Components with limit values that require monitoring at the workplace:**

142844-00-6 refractory ceramic fibers (RCF)

ACGIH TLV: 0.2 f/cc

- **Personal protective equipment:**
- **General protective and hygienic measures:**
 - Keep away from foodstuffs, beverages and feed.
 - Wash hands before breaks and at the end of work.
 - Store protective clothing separately.
 - Avoid contact with the eyes.
 - Avoid contact with the eyes and skin.
- **Breathing equipment:**



NIOSH approved respirators should be used if dust is present. A respiratory protection program should be implemented if exposures exceed OSHA PELs.

- **Protection of hands:**



Protective gloves recommended

- **Eye protection:** Safety glasses with side shields recommended

9 Physical and chemical properties

- **Form:** Fibers
- **Color:** White
- **Odor:** Odorless

- **Change in condition**
 - Melting point/Melting range:* 1760°C (3200°F)
 - Boiling point/Boiling range:* Undetermined.

(Contd. on page 4)

USA



MATERIAL SAFETY DATA SHEET

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 4/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

(Contd. from page 3)

- | | |
|---|---|
| · Flash point: | Not applicable. |
| · Auto igniting: | Product is not selfigniting. |
| · Danger of explosion: | Product does not present an explosion hazard. |
| · Density at 20°C (68°F): | 2.73 g/cm ³ |
| · Solubility in / Miscibility with Water: | Insoluble. |

10 Stability and reactivity

- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Dangerous reactions: No dangerous reactions known.
- Dangerous products of decomposition: No dangerous decomposition products known.

11 Toxicological information

- Acute toxicity:
- Primary acute effects:
- Skin contact: No irritant effect.
- Eye contact: Irritating effect.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant.
Carcinogenic.

12 Ecological information

- General notes: At present there are no ecotoxicological assessments.

13 Disposal considerations

- Recommendation for Disposal of Product:
As sold, this product is not RCRA hazardous. Final used condition must be evaluated prior to disposal. Dispose of waste product in accordance with Federal, State and Local regulations.
- Recommendation for Disposal of Uncleaned Packaging: Reuse, recycle or treat as industrial waste.

14 Transport information

- Transport/Additional information: Not dangerous according to available information.

USA

(Contd. on page 5)



MATERIAL SAFETY DATA SHEET

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 5/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

(Contd. from page 4)

15 Regulations**SARA 313 TOXIC CHEMICALS**

No material listed in the components in Section 2 of this MSDS is on the SARA 313 list.

SARA 302 EXTREMELY HAZARDOUS SUBSTANCES

No material listed in the components in Section 2 of this MSDS is on the SARA 302 list.

TSCA (Toxic Substances Control Act)

This substance or all the ingredients of this product are on the Chemical Substances Inventory of the Toxic Substances Control Act (TSCA Inventory). The presence on this list does not require any legal reporting.

WHMIS Classification

Class D - Division 2 - Sub Division A

Untested mixture containing a very toxic material

Class D - Division 2 - Sub Division B

Untested mixture containing a toxic material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Classification according to EU-guidelines**Hazard symbols:**

Toxic

Hazard-determining components of labeling:

refractory ceramic fibers (RCF)

Risk phrases:

May cause cancer.

Irritating to eyes and respiratory system.

Safety phrases:

Do not breathe dust.

Avoid contact with eyes.

After contact with skin, wash immediately with plenty of soap and water

Wear suitable protective clothing and gloves.

Special labeling of certain preparations:

PRODUCT MAY CONTAIN REFRACTORY CERAMIC FIBERS (RCF) OR INCLUDE A WRAP OR MAT WHICH CONTAINS RCF:

Prolonged or repeated inhalation of RCF dust may cause cancer.

Exposure of the product to high temperature may convert fibers to crystalline silica, an IARC and NTP listed carcinogen which can cause silicosis or cancer.

Use with adequate ventilation, wear safety glasses and dust-type respirator if dust is present.

In case of inhalation, remove victim to fresh air.

In case of eye contact, flush with water for 15 minutes.

National regulations:

The following ingredients are known in the state of California to be a cancer risk (Proposition 65):

142844-00-6 refractory ceramic fibers (RCF)

USA

(Contd. on page 6)



MATERIAL SAFETY DATA SHEET

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 6/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

(Contd. from page 5)

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Contact:** Patricia A. Kott 412-469-6123

· **Creation date:** 08/14/2000

USA



Material Safety Data Sheet
for
Lime Kiln Dust

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Mixture of calcium oxide (quick lime) and calcium carbonate (limestone)

Trade Name and Synonyms: Lime Kiln Dust

CAS No.: 1305-78-8

Date Revised: October 2001

Section II - Hazardous Ingredients

Hazardous Component	CAS Number	OSHA PEL	ACGIH TLV	MSHA 1973 TLV
Calcium oxide (quicklime, CaO)	1305-78-8	5 mg/m ³	2 mg/m ³	5 mg/m ³
Calcium carbonate (limestone)	1317-65-3	15 mg/m ³	10 mg/m ³	10 mg/m ³
Magnesium oxide	1309-48-4	10 mg/m ³	10 mg/m ³	10 mg/m ³ **
Quartz, crystalline silica	14808-60-7	PEL = 10 mg/m ³ % Silica* + 2	0.05 mg/m ³	PEL = 10 mg/m ³ % Silica * + 2

Lime Kiln Dust (LKD) may contain greater than 0.1% quartz, crystalline silica. Chronic exposure, above the allowed limit, to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

*Respirable fraction ** As fume

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family:	Inorganic Base	Evaporation Rate:	Not Applicable
Molecular Weight:	Not Applicable		
Boiling Point:	2850°C		
Melting Point:	2614°C		
Specific Gravity:	3.00		
Vapor Density:	(Air=1) Not Applicable		
Solubility in Water:	< 0.131 g/100mL @ 10°C; reacts with water to generate calcium hydroxide and large amounts of heat		
Appearance and Odor:	White or gray lumps or powder, odorless		

Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; this material is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable **LEL:** Not Applicable **UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Lime Kiln Dust is incombustible. In contact with water, product will hydrate evolving heat. **Warning:** Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. **CAUTION:** Saturated water solutions of Lime Kiln Dust can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Lime Kiln Dust can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
- c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

3. Eye contact: corrosive

- a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
- b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
- c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.

4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO **By NTP:** NO **By IARC:** NO

Calcium Carbonate listed as an OSHA Carcinogen: NO **By NTP:** NO **By IARC:** NO

Magnesium Oxide listed as an OSHA Carcinogen: NO **By NTP:** NO **By IARC:** NO

Quartz listed as an OSHA Carcinogen: NO **By NTP:** YES (Group 2A) **By IARC:** YES (Group 1)

Silica is on the California Governor's Proposition 65 list. Components used in this product may contain trace amounts of naturally occurring elements (such as, but not limited to, arsenic, cadmium) that are on the Governor's Proposition 65 list.

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition. May react explosively with maleic anhydride. May form explosive salts with Nitro compounds. May react with aluminum in the presence of water to form hydrogen gas.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of Lime Kiln Dust can have pH of 12-12.49 at 25°C or above, and are corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water, moisture, acids and other incompatible materials. Do not store or ship in aluminum containers.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability (with at least an N95 rating) for protection against airborne Lime Kiln Dust.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of Lime Kiln Dust.

Work/Hygienic Practices: Immediately after working with Lime Kiln Dust, workers should shower with soap and water. Follow listed precautions as appropriate during the maintenance and/or repair of contaminated equipment.

Section IX – Shipping and Handling Restrictions

When being transported by air, calcium oxide is classified in Department of Transportation (DOT) regulations as a hazardous material. If this material may be shipped by air, it must be presented to the carrier appropriately packaged, marked, and labeled and must be accompanied by the appropriate shipping documentation. Only personnel that are trained and certified under applicable DOT Hazardous Materials Regulations (found in 49 CFR) may prepare calcium oxide for air transport.

For additional information, contact the DOT Website at: <http://www.text-trieve.com/dotrspa>

Disclaimer

Ash Grove Cement Company provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must consult their own technical and legal advisors and/or exercise their own judgment in determining its appropriateness for a particular purpose.

ASH GROVE CEMENT COMPANY MAKES SPECIFICALLY DISCLAIMS ANY EXPRESS WARRANTY, ANY IMPLIED WARRANTY OF MERCHANTABILITY OF GOODS, AND ANY IMPLIED WARRANTY OF FITNESS OF GOODS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER EXPRESSED OR IMPLIED WARRANTY, AND, ALL SUCH WARRANTIES ARE EXCLUDED.

This product neither contains nor is directly manufactured with
any controlled ozone depleting substances, Class I and II.



Material Safety Data Sheet for Lime Kiln Dust

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
8900 Indian Creek Parkway
P. O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Mixture of calcium oxide (quick lime) and calcium carbonate (limestone)

Trade Name and Synonyms: Lime Kiln Dust

CAS No.: 1305-78-8

Date Revised: October 2001

Section II - Hazardous Ingredients

Hazardous Component	CAS Number	OSHA PEL	ACGIH TLV	MSHA 1973 TLV
Calcium oxide (quicklime, CaO)	1305-78-8	5 mg/m ³	2 mg/m ³	5 mg/m ³
Calcium carbonate (limestone)	1317-65-3	15 mg/m ³	10 mg/m ³	10 mg/m ³
Magnesium oxide	1309-48-4	10 mg/m ³	10 mg/m ³	10 mg/m ³ **
Quartz, crystalline silica	14808-60-7	PEL = <u>10 mg/m³</u> % Silica* + 2	0.05 mg/m ³	PEL = <u>10 mg/m³</u> % Silica* + 2

Lime Kiln Dust (LKD) may contain greater than 0.1% quartz, crystalline silica. Chronic exposure, above the allowed limit, to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

*Respirable fraction ** As fume

ACGIH American Conference of Governmental Industrial Hygienists
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family:	Inorganic Base	Evaporation Rate: Not Applicable
Molecular Weight:	Not Applicable	
Boiling Point:	2850°C	
Melting Point:	2614°C	
Specific Gravity:	3.00	
Vapor Density:	(Air=1) Not Applicable	
Solubility in Water:	< 0.131 g/100mL @ 10°C; reacts with water to generate calcium hydroxide and large amounts of heat	
Appearance and Odor:	White or gray lumps or powder, odorless	

Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; this material is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable **LEL:** Not Applicable **UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Lime Kiln Dust is incombustible. In contact with water, product will hydrate evolving heat. **Warning:** Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. **CAUTION:** Saturated water solutions of Lime Kiln Dust can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Lime Kiln Dust can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. **Acute exposure:** Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. **Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
- c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. **Acute exposure:** During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. **Chronic exposure:** A chronic dermatitis may follow repeated contact.
- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

3. Eye contact: corrosive

- a. **Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
- b. **Chronic exposure:** Prolonged contact may cause conjunctivitis.
- c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.

4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO

Calcium Carbonate listed as an OSHA Carcinogen: NO By NTP: NO By IARC: NO

Magnesium Oxide listed as an OSHA Carcinogen: NO By NTP: NO By IARC: NO

Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Silica is on the California Governor's Proposition 65 list. Components used in this product may contain trace amounts of naturally occurring elements (such as, but not limited to, arsenic, cadmium) that are on the Governor's Proposition 65 list.

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Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition. May react explosively with maleic anhydride. May form explosive salts with Nitro compounds. May react with aluminum in the presence of water to form hydrogen gas.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of Lime Kiln Dust can have pH of 12-12.49 at 25°C or above, and are corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

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For additional information, contact the DOT Website at: <http://www.text-trieve.com/dotrspa>

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any controlled ozone depleting substances, Class I and II.

— Section 1 —
Product Identification



Material Safety Data Sheet

The Sherwin-Williams Co.
101 Prospect Ave. N.W.
Cleveland, OH 44115

Emergency telephone number
Information telephone number
Date of preparation

(216) 566-2917
(216) 566-2902
September 12, 2002

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THERMO-CURE® Heat Resistant Coating

B59-TC

— Section 2 — CAS No. Hazardous Ingredients (percent by weight)		ACGIH TLV <STEL>	OSHA PEL <STEL>	Units	LD50 (Rat-Oral) mg/kg	LC50 (Rat) ppm/4hr.	Vapor Pressure mm	B59A380 Cirrus Gray	B59A381 Thunder Gray	P E R C E N T B Y W E I G H T
108-88-3	§ Toluene.	50	100 <150>	ppm (skin)	5000	4000	22.0	5	5	
100-41-4	§ Ethylbenzene	100 <125>	100 <125>	ppm	3500	NAv	7.1	2	2	
1330-20-7	§ Xylene.	100 <150>	100 <150>	ppm	4300	5000	5.9	10	10	
108-67-8	1,3,5-Trimethylbenzene	25	25	ppm	NAv	NAv	2.0	1	1	
95-63-6	§ 1,2,4-Trimethylbenzene	25	25	ppm	NAv	NAv	2.0	2	2	
71-36-3	§ 1-Butanol	C 50	C 50	ppm (skin)	790	8000	5.5	3	4	
14807-96-6	Talc	2	2	Mg/m3 as Resp. Dust	NAv	NAv		28	28	
13463-67-7	Titanium Dioxide.	10	10[5]	mg/m3 as Dust [Resp. Fraction]	NAv	NAv		18	11	
68186-91-4	Copper Chromite Black Spinel.	0.5	0.5	mg/m3	NAv	NAv			5	
	§ Chromium III Compound. [% Chromium]								5 [2.2]	
	§ Manganese Compound [% Manganese]								5 [0.1]	
	§ Copper Compound. [% Copper]								5 [1.3]	
	§ Zinc Compound. [% Zinc]							6 [2.7]	8 [3.4]	
	Weight per Gallon (lbs.)							13.13	13.16	
	Solids by Weight (%)							76.2	76.2	
	Solids by Volume (%)							56.1	55.9	
	VOC (Volatile Organic Compounds) - lbs./gal.							3.12	3.13	
	Photochemically Reactive							Yes	Yes	
	Flash Point (°F)							75	75	
	HMIS (NFPA) Rating (health - flammability - reactivity)							2* - 3 - 0	2* - 3 - 0	

§ Ingredient subject to the reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313, 40 CFR 372.65 C

→→→ MSDS Text Page Follows →→→

— Section 1 —
Product Identification



Material Safety Data Sheet

The Sherwin-Williams Co.
101 Prospect Ave. N.W.
Cleveland, OH 44115

Emergency telephone number
Information telephone number
Date of preparation

(216) 566-2917
(216) 566-2902
September 12, 2002

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THERMO-CURE® Heat Resistant Coating

B59-TC

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100-41-4	§ Ethylbenzene	100 <125>	100 <125>	ppm	3500	NAv	7.1	2	2	
1330-20-7	§ Xylene.	100 <150>	100 <150>	ppm	4300	5000	5.9	10	10	
108-67-8	1,3,5-Trimethylbenzene	25	25	ppm	NAv	NAv	2.0	1	1	
95-63-6	§ 1,2,4-Trimethylbenzene	25	25	ppm	NAv	NAv	2.0	2	2	
71-36-3	§ 1-Butanol	C 50	C 50	ppm (skin)	790	8000	5.5	3	4	
14807-96-6	Talc	2	2	Mg/m3 as Resp. Dust	NAv	NAv		28	28	
13463-67-7	Titanium Dioxide.	10	10[5]	mg/m3 as Dust [Resp. Fraction]	NAv	NAv		18	11	
68186-91-4	Copper Chromite Black Spinel.	0.5	0.5	mg/m3	NAv	NAv			5	
	§ Chromium III Compound. [% Chromium]								5 [2.2]	
	§ Manganese Compound [% Manganese]								5 [0.1]	
	§ Copper Compound. [% Copper]								5 [1.3]	
	§ Zinc Compound. [% Zinc]							6 [2.7]	8 [3.4]	
	Weight per Gallon (lbs.)							13.13	13.16	
	Solids by Weight (%)							76.2	76.2	
	Solids by Volume (%)							56.1	55.9	
	VOC (Volatile Organic Compounds) - lbs./gal.							3.12	3.13	
	Photochemically Reactive							Yes	Yes	
	Flash Point (°F)							75	75	
	HMIS (NFPA) Rating (health - flammability - reactivity)							2* - 3 - 0	2* - 3 - 0	

§ Ingredient subject to the reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313, 40 CFR 372.65 C

→→→ MSDS Text Page Follows →→→

Section 3 — Hazards Identification

ROUTES OF EXPOSURE - Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

EFFECTS OF OVEREXPOSURE - Irritation of eyes, skin and upper respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE - Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists. Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE - None generally recognized.

CANCER INFORMATION - For complete discussion of toxicology data refer to Section 11.

Section 4 — First Aid Measures

INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

ON SKIN: Wash affected area thoroughly with soap and water.

Remove contaminated clothing and launder before re-use.

IN EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

SWALLOWED: Do not induce vomiting. Get medical attention immediately.

Section 5 — Fire Fighting Measures

FLASH POINT	LEL	UEL
See TABLE	0.9	11.2

FLAMMABILITY CLASSIFICATION - RED LABEL -- Flammable, Flash below 100 °F

EXTINGUISHING MEDIA - Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS - Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES - Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 6 — Accidental Release Measures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - Remove all sources of ignition. Ventilate the area. Remove with inert absorbent.

Section 7 — Handling and Storage

STORAGE CATEGORY - DOL Storage Class IC

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING - Contents are FLAMMABLE. Keep away from heat, sparks, and open flame. During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition. Consult NFPA Code. Use approved Bonding and Grounding procedures. Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Section 8 — Exposure Controls/Personal Protection

PRECAUTIONS TO BE TAKEN IN USE - Use only with adequate ventilation. Avoid contact with skin and eyes. Avoid breathing vapor and spray mist. Wash hands after using.

These coatings may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg./m³ (total dust), 3 mg./m³ (respirable fraction), OSHA PEL 15 mg./m³ (total dust), 5 mg./m³ (respirable fraction).

VENTILATION - Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION - If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding, wirebrushing, abrading, burning or welding the dried film, wear a particulate respirator approved by NIOSH/MSHA for protection against non-volatile materials in Section 2.

PROTECTIVE GLOVES - Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION - Wear safety spectacles with unperforated sideshields.

OTHER PRECAUTIONS - Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 9 — Physical and Chemical Properties

PRODUCT WEIGHT	See TABLE	EVAPORATION RATE	Slower than ether
SPECIFIC GRAVITY	1.58	VAPOR DENSITY	Heavier than air
BOILING POINT	222 - 337 °F	MELTING POINT	Not Available
VOLATILE VOLUME	43 - 44 %	SOLUBILITY IN WATER	Not Available

Section 10 — Stability and Reactivity

STABILITY - Stable

CONDITIONS TO AVOID - None known.

INCOMPATIBILITY - None known.

HAZARDOUS DECOMPOSITION PRODUCTS - By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Metals in Section 2

HAZARDOUS POLYMERIZATION - Will not occur

Section 11 — Toxicological Information

CHRONIC Health Hazards - Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumor in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary, cardiovascular and reproductive systems.

Rats exposed to titanium dioxide dust at 250 mg./m³ developed lung cancer, however, such exposure levels are not attainable in the workplace.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Chromium III is considered the active species in cancer induction, but Chromium III compounds do not cross the cell wall. However, there is some evidence that Chromium III compounds of respirable particle size may be taken up by the cells in the lung.

Section 12 — Ecological Information

No data available.

Section 13 — Disposal Considerations

WASTE DISPOSAL METHOD - Waste from these products may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability and extractability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

Section 14 — Transport Information

No data available.

Section 15 — Regulatory Information

CALIFORNIA PROPOSITION 65 - WARNING: These products contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION - All chemicals in these products are listed, or are exempt from listing, on the TSCA Inventory.

Section 16 — Other Information

These products have been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The above information pertains to these products as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to these products may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Section 3 — Hazards Identification

ROUTES OF EXPOSURE - Exposure may be by INHALATION and/or SKIN or EYE contact, depending on conditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective equipment.

EFFECTS OF OVEREXPOSURE - Irritation of eyes, skin and upper respiratory system. May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE - Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists. Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE - None generally recognized.

CANCER INFORMATION - For complete discussion of toxicology data refer to Section 11.

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INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

ON SKIN: Wash affected area thoroughly with soap and water.

Remove contaminated clothing and launder before re-use.

IN EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

SWALLOWED: Do not induce vomiting. Get medical attention immediately.

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FLASH POINT	LEL	UEL
See TABLE	0.9	11.2

FLAMMABILITY CLASSIFICATION - RED LABEL -- Flammable, Flash below 100 °F

EXTINGUISHING MEDIA - Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS - Closed containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES - Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

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STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - Remove all sources of ignition. Ventilate the area. Remove with inert absorbent.

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STORAGE CATEGORY - DOL Storage Class IC

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING - Contents are FLAMMABLE. Keep away from heat, sparks, and open flame. During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition. Consult NFPA Code. Use approved Bonding and Grounding procedures. Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

Section 8 — Exposure Controls/Personal Protection

PRECAUTIONS TO BE TAKEN IN USE - Use only with adequate ventilation. Avoid contact with skin and eyes. Avoid breathing vapor and spray mist. Wash hands after using.

These coatings may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg./m³ (total dust), 3 mg./m³ (respirable fraction), OSHA PEL 15 mg./m³ (total dust), 5 mg./m³ (respirable fraction).

VENTILATION - Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION - If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding, wirebrushing, abrading, burning or welding the dried film, wear a particulate respirator approved by NIOSH/MSHA for protection against non-volatile materials in Section 2.

PROTECTIVE GLOVES - Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION - Wear safety spectacles with unperforated sideshields.

OTHER PRECAUTIONS - Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 9 — Physical and Chemical Properties

PRODUCT WEIGHT	See TABLE	EVAPORATION RATE	Slower than ether
SPECIFIC GRAVITY	1.58	VAPOR DENSITY	Heavier than air
BOILING POINT	222 - 337 °F	MELTING POINT	Not Available
VOLATILE VOLUME	43 - 44 %	SOLUBILITY IN WATER	Not Available

Section 10 — Stability and Reactivity

STABILITY - Stable

CONDITIONS TO AVOID - None known.

INCOMPATIBILITY - None known.

HAZARDOUS DECOMPOSITION PRODUCTS - By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Metals in Section 2

HAZARDOUS POLYMERIZATION - Will not occur

Section 11 — Toxicological Information

CHRONIC Health Hazards - Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumor in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary, cardiovascular and reproductive systems.

Rats exposed to titanium dioxide dust at 250 mg./m³ developed lung cancer, however, such exposure levels are not attainable in the workplace.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Chromium III is considered the active species in cancer induction, but Chromium III compounds do not cross the cell wall. However, there is some evidence that Chromium III compounds of respirable particle size may be taken up by the cells in the lung.

Section 12 — Ecological Information

No data available.

Section 13 — Disposal Considerations

WASTE DISPOSAL METHOD - Waste from these products may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability and extractability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

Section 14 — Transport Information

No data available.

Section 15 — Regulatory Information

CALIFORNIA PROPOSITION 65 - WARNING: These products contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION - All chemicals in these products are listed, or are exempt from listing, on the TSCA Inventory.

Section 16 — Other Information

These products have been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The above information pertains to these products as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to these products may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

12/30/02
Solvent

Mineral Spirits 66/3

Material Safety Data Sheet

CTGO Petroleum Corporation
1701 Golf Road, Suite 1-1101
Rolling Meadows, IL 60008-4295

MSDS No. 19024
Revision Date 01/11/2001

IMPORTANT: Read this MSDS before handling or disposing of this product and pass this information on to employees, customers and users of this product.

Emergency Overview

Physical State Liquid.
Color Transparent, colorless. **Odor** Light paraffinic hydrocarbon.

WARNING! Combustible liquid; vapor may cause flash fire!
Mist or vapor may irritate the eyes, mucous membranes, and respiratory tract!

Liquid contact may cause minimal to moderate eye and/or moderate to severe skin irritation and inflammation!

May be harmful if inhaled or absorbed through the skin!
Overexposures may cause central nervous system (CNS) depression and/or other target organ effects!

May be harmful or fatal if ingested!

Aspiration into the lungs can cause pulmonary edema and chemical pneumonia!

Spills may create a slipping hazard!

Hazard Rankings

	HMS	NFPA
Health Hazard	1	0
Fire Hazard	2	2
Reactivity	0	0

* = Chronic Health Hazard

Protective Equipment

Minimum Requirements
See Section 8 for Details



SECTION 1: IDENTIFICATION

Trade Name	Mineral Spirits 66/3	Technical Contact	(800) 967-7601 (8am - 4pm CT M-F)
Product Number	2024	Medical Emergency	(918) 495-4700
CAS Number	64742-47-8 or 8052-41-3	CHENTREC Emergency (United States Only)	(800) 424-9300
Product Family	Petroleum Hydrocarbon Solvent		
Synonyms	Stoddard Solvent; Type 1 Hydrocarbon Drycleaning Solvent (meets ASTM D-484 Type 1 specifications); Type 1C Mineral Spirits (meets ASTM D-235 Type 1C specifications); D40 Naphtha; White Spirits (meets Dry Cleaning Fluid Specification PD680 - Type I; CB-C12 Petroleum Hydrocarbons.		

SECTION 2: COMPOSITION

Component Name(s)	CAS Registry No.	Concentration (%)
1) Stoddard Solvent	8052-41-3	100
2) Light Hydrotreated Distillate (Petroleum)	64742-47-8	100
3) Nonanes	Mixture	20-35
4) C10 Alkanes, Isoparaffins, and Cycloalkanes	Mixture	40-60
5) C11 Alkanes, Isoparaffins, and Cycloalkanes	Mixture	15-25
6) C12 Alkanes, Isoparaffins, and Cycloalkanes	Mixture	1-15

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SECTION 4: FIRST AID MEASURES

Take proper precautions to ensure your own health and safety before attempting rescue or providing first aid. For more specific information, refer to Exposure Controls and Personal Protection in Section 8 of this MSDS.

Inhalation	Immediately move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If breathing is difficult, 100 percent humidified oxygen should be administered by a qualified individual. Seek medical attention immediately.
Eye Contact	Check for and remove contact lenses. If irritation or redness develops, flush eyes with cool, clean, low-pressure water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of the eye and eyelid tissue. Do not use eye ointment. Seek medical attention immediately.
Skin Contact	Remove contaminated shoes and clothing. Flush affected area with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. Do not use ointments. If skin surface is not damaged, clean affected area thoroughly with mild soap and water. Seek medical attention if tissue appears damaged or if pain or irritation persists.
Ingestion	Do not induce vomiting or give anything by mouth. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Seek medical attention immediately.
Notes to Physician	Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. Vigorous anti-inflammatory/steroid treatment may be required at first evidence of upper airway or pulmonary edema. Administer 100 percent humidified supplemental oxygen with assisted ventilation, as required. If ingested, this material presents a significant aspiration/chemical pneumonitis hazard. As a result, induction of emesis is not recommended. Administer an aqueous slurry of activated charcoal followed by a cathartic such as magnesium citrate or sorbitol. Also, treatment may involve careful gastric lavage if performed soon after ingestion or in patients who are comatose or at risk of convulsing. Protect the airway by cuffed endotracheal intubation or by placement of the body in a Trendelenburg and left lateral decubitus position. Obtain chest X-ray and liver function tests. Monitor for cardiac function, respiratory distress and arterial blood gases in severe exposure cases.

SECTION 5: FIRE FIGHTING MEASURES

NFPA Flammability Classification	OSHA/NFPA Class-II Combustible Liquid, Highly combustible		
Flash Point Method	CLOSED CUP: 42° to 46°C (107° to 113°F). (Tagliabue (ASTM D-56))		
Lower Flammable Limit	AP 0.6 %	Upper Flammable Limit	AP 8.0 %
Autoignition Temperature	AP 230°C (448°F)		
Hazardous Combustion Products	Burning or excessive heating may produce smoke, carbon monoxide, carbon dioxide, and possibly other harmful gases/vapors.		
Special Properties	Combustible Liquid! This material releases vapors at or approaching its flash point temperature. When mixed with air in certain proportions and exposed to an ignition source, its vapor can cause a flash fire. Use only with adequate ventilation. Vapors are heavier than air and may travel long distances along the ground to an ignition source and flash back. May create vapor/air explosion hazard in confined spaces such as sewers. If container is not properly cooled, it can rupture in the heat of a fire.		
Extinguishing Media	SMALL FIRE: Use dry chemicals, carbon dioxide (CO ₂), foam, water fog, or inert gas (nitrogen). LARGE FIRE: Use foam, water fog, or waterspray. Water fog and spray are effective in cooling containers and adjacent structures but might cause frothing and/or may not achieve extinguishment. A water jet may be used to cool the vessel's external walls to prevent pressure build-up, autoignition, or explosion. NEVER use a water jet directly on the fire because it may spread the fire to a larger area.		

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Fire Fighting Protective Clothing

Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles. Cover pooling liquid with foam. Containers can build pressure if exposed to radiant heat; cool adjacent containers with flooding quantities of water until well after the fire is out. Withdraw immediately from the area if there is a rising sound from venting safety devices or discoloration of vessels, tanks, or pipelines. Be aware that burning liquid will float on water. Notify appropriate authorities if liquid(s) enter sewers or waterways.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Take proper precautions to ensure your own health and safety before attempting spill control or clean-up. For more specific information, refer to the Emergency Overview on Page 1, Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this MSDS.

Combustible Liquid: Release causes an immediate fire or explosion hazard. Evacuate all non-essential personnel from immediate area and establish a "regulated zone" with site control and security. A vapor-suppressing foam may be used to reduce vapors. Eliminate all ignition sources. All equipment used when handling this material must be grounded. Stop the leak if it can be done without risk. Do not touch or walk through spilled material. Remove spillage immediately from hard, smooth walking areas. Prevent its entry into waterways, sewers, basements, or confined areas. Absorb or cover with dry earth, sand, or other non-combustible material and transfer to appropriate waste containers. Use clean, non-sparking tools to collect absorbed material.

For large spills, secure the area and control access. Dike far ahead of a liquid spill to ensure complete collection. Water mist or spray may be used to reduce or disperse vapors; but, it may not prevent ignition in closed spaces. This material will float on water and its run-off may create an explosion or fire hazard. Verify that responders are properly HAZWOPER-trained and wearing appropriate respiratory equipment and fire-resistant protective clothing during cleanup operations. In an urban area, cleanup spill as soon as possible; in natural environments, cleanup on advice from specialists. Pick up free liquid for recycle and/or disposal if it can be accomplished safely with explosion-proof equipment. Collect any excess material with absorbent pads, sand, or other inert non-combustible absorbent materials. Place into appropriate waste containers for later disposal. Comply with all laws and regulations.

SECTION 7: HANDLING AND STORAGE

Handling

A spill or leak can cause an immediate fire/explosion hazard. Keep containers closed and do not handle or store near heat, sparks, or any other potential ignition sources. Bond and ground all equipment before transferring this material from one container to another. Do not contact with oxidizable materials. Do not breathe vapor. Use only with adequate ventilation/personal protection. Never siphon by mouth. Avoid contact with eyes, skin, and clothing. Prevent contact with food, chewing, or smoking materials. Do not take internally.

When performing repairs and maintenance on contaminated equipment, keep unnecessary persons away from the area. Eliminate all potential ignition sources. Drain and purge equipment, as necessary, to remove material residues. Use gloves constructed of impervious materials and protective clothing if direct contact is anticipated. Provide ventilation to maintain exposure potential below applicable exposure limits. Promptly remove contaminated clothing. Wash exposed skin thoroughly with soap and water after handling.

Empty containers may contain material residues which can ignite with explosive force. Misuse of empty containers can be dangerous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers can cause fire, explosion, or release of toxic fumes from residues. Do not pressurize or expose empty containers to open flame, sparks, or heat. Keep container closed and drum bungs in place. All label warnings and precautions must be observed. Return empty drums to a qualified recycler. Consult appropriate federal, state and local authorities before reusing, reconditioning, reclaiming, recycling, or disposing of empty containers and/or waste residues of this material.

Storage

Store and transport in accordance with all applicable laws. Keep containers tightly closed and store in a cool, dry, well-ventilated place, plainly labeled, and out of closed vehicles. Keep away from all ignition sources. Ground all equipment containing this material. Containers should be able to withstand pressures expected from warming and cooling in storage. This combustible liquid should be stored in a separate safety cabinet or room. All electrical equipment in areas where this material is stored or handled should be installed in accordance with applicable requirements of the N.F.P.A.'s National Electrical Code (NEC).

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SECTION 3: HAZARDS IDENTIFICATION

Also see Emergency Overview and Hazard Ratings on the top of Page 1 of this MSDS.

Major Route(s) of Entry Skin Contact. Eye Contact. Absorption. Inhalation.

Signs and Symptoms of Acute Exposure

Inhalation Breathing high concentrations of vapor may cause respiratory irritation, euphoria, excitation or giddiness, headache, nausea, vomiting, abdominal pain, loss of appetite, fatigue, muscular weakness, staggering gait, and central nervous system (CNS) depression. CNS effects include dizziness, drowsiness, disorientation, vertigo, memory loss, visual disturbances, difficulty with breathing, convulsions, unconsciousness, paralysis, coma, and even death, depending upon the level of exposure concentration and/or duration. Vapors can reduce the oxygen content in air. Approximately 20,000 ppm (or 2 vol.%) in air is fatal to humans in 5 to 10 minutes. Sudden death from cardiac arrest (heart attack) may result from exposure to 5,000 ppm for only 6 minutes. Oxygen deprivation is possible if working in confined spaces.

Eye Contact Animal test results on similar materials suggest that this product can cause minimal to moderate eye irritation upon short-term exposure. Symptoms include stinging, watering, redness, and swelling.

Skin Contact Animal test results on similar materials suggest that this product can cause moderate skin irritation. Short-term contact symptoms include redness, itching, and burning of the skin. This material may also be absorbed through the skin and produce CNS depression effects (see "Inhalation" above). If the skin is damaged, absorption increases. Prolonged and/or repeated contact may cause moderate to severe dermatitis. Chronic symptoms may include drying, swelling, scaling, blistering, cracking, and severe tissue damage.

Ingestion If swallowed, this material may irritate the mucous membranes of the mouth, throat, and esophagus. It can be readily absorbed by the stomach and intestinal tract. Symptoms include a burning sensation of the mouth and esophagus, nausea, vomiting, dizziness, staggering gait, drowsiness, loss of consciousness, and delirium, as well as additional central nervous system (CNS) effects (see "Inhalation" above).

Due to its light viscosity, there is a danger of aspiration into the lungs during vomiting. Aspiration can result in severe lung damage or death. Progressive CNS depression, respiratory insufficiency, and ventricular fibrillation may also result in death.

Chronic Health Effects Summary Chronic effects of ingestion and subsequent aspiration into the lungs may cause pneumatocele (lung cavity) formation and chronic lung dysfunction.

Reports have associated repeated and prolonged occupational overexposure to solvents with irreversible brain and nervous system damage (sometimes referred to as "Solvent or Painter's Syndrome"). Intentional misuse by deliberately concentrating and inhaling this product may be harmful or fatal.

Conditions Aggravated by Exposure Personnel with pre-existing central nervous system (CNS) disease, neurological conditions, skin disorders, chronic respiratory diseases, or impaired liver or kidney function should avoid exposure.

Target Organs This substance is toxic to lungs, central nervous system, brain, mucous membranes, skin, eyes, and possibly, the blood, liver, or kidneys.


Carcinogenic Potential This product does not contain any components at concentrations above 0.1% which are considered carcinogenic by OSHA, IARC, or NTP.

OSHA Hazard Classification is indicated by an "X" in the box adjacent to the hazard title. If no "X" is present, the product does not exhibit the hazard as defined in the OSHA Hazard Communication Standard (29 CFR 1910.1200).

OSHA Health Hazard Classification				OSHA Physical Hazard Classification			
Irritant	<input checked="" type="checkbox"/>	Toxic	<input type="checkbox"/>	Combustible	<input checked="" type="checkbox"/>	Explosive	<input type="checkbox"/>
Sensitizer	<input type="checkbox"/>	Highly Toxic	<input type="checkbox"/>	Flammable	<input type="checkbox"/>	Oxidizer	<input type="checkbox"/>
Corrosive	<input type="checkbox"/>	Carcinogenic	<input type="checkbox"/>	Compressed Gas	<input type="checkbox"/>	Organic Peroxide	<input type="checkbox"/>
						Pyrophoric	<input type="checkbox"/>
						Water-reactive	<input type="checkbox"/>
						Unstable	<input type="checkbox"/>

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SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and/or mists below the pertinent exposure limits (see below). All electrical equipment should comply with the NFPA NEC Standards. Ensure that an emergency eye wash station and safety shower are near the work-station location.
Personal Protective Equipment	Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to OSHA regulations. The following pictograms represent the minimum requirements for personal protective equipment. For certain operations, additional PPE may be required.
	
Eye Protection	Safety glasses with side shields are recommended as a minimum protection. During transfer operations or when there is a likelihood of misting, splashing, or spraying, chemical goggles and face shield should be worn. Suitable eye wash water should be readily available.
Hand Protection	Avoid skin contact and use gloves (disposable PVC, neoprene, nitrile, vinyl, or PVC/NBR). Before eating, drinking, smoking, use of toilet facilities, or leaving work, wash hands with plenty of mild soap and water. DO NOT use gasoline, kerosene, other solvents, or harsh abrasive skin cleaners.
Body Protection	Avoid skin contact. It is recommended that fire-retardant garments (e.g. Nomex™) be worn while working with flammable and combustible liquids. If splashing or spraying is expected, chemical-resistant protective clothing (Tyvek®, nitrile, or neoprene) should be worn. This might include long-sleeves, apron, slicker suit, boots, and additional facial protection. If general contact occurs, IMMEDIATELY remove soaked clothing and take a shower. Contaminated leather goods should be removed promptly and discarded.
Respiratory Protection	For unknown vapor concentrations use a positive-pressure, pressure-demand, self-contained breathing apparatus (SCBA). For known vapor concentrations above the occupational exposure guidelines (see below), use a NIOSH-approved organic vapor respirator if adequate protection is provided. Protection factors vary depending upon the type of respirator used. Respirator use should follow OSHA requirements (29 CFR 1910.134) or equivalent standard (e.g. ANSI Z88.2).
General Comments	Warning! Odor is an inadequate warning for hazardous conditions. This product is sometimes used as a dry-cleaning solvent. Retained solvent present in absorbent clothing (e.g., shoulder pads, leather belts or straps, etc.) which remains in contact with the skin for prolonged periods has caused severe skin irritation including redness, swelling, burns, and severe tissue damage. Care must be taken to ensure that garments are completely dry before being worn.

Occupational Exposure Guidelines

Substance	Applicable Workplace Exposure Levels
1) Stoddard Solvent	TWA: 100 (ppm) from ACGIH (TLV) [2000] TWA: 500 (ppm) from OSHA (PEL) [1989]
2) Nonane, all isomers	TWA: 200 (ppm) from ACGIH (TLV) [2000] TWA: 200 (ppm) from OSHA (PEL) [1989]

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid.	Color	Transparent, colorless.	Odor	Light paraffinic hydrocarbon.
Specific Gravity	0.78 (Water = 1)	pH	Not applicable.	Vapor Density	4.8 (Air = 1)
Boiling Point/Range	160° to 200°C (320° to 392°F) (ASTM D-2887)	Melting/Freezing Point		-66° to -26°C (-85° to -13°F)	
Vapor Pressure	2.8 mm of Hg at 20°C (68°F) (ASTM D-6181) or 0.35 torr at 20°C (68°F) by Isoteniscope (ASTM D-2879).	Viscosity (cSt @ 40°C)		LT 15	
Solubility In Water	Slightly soluble in cold water (LT 0.05%).	Volatile Characteristics		Volatile Organic Compounds (VOCs) Content = 100%; 777 gm/L.	

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Additional Properties Alkane, Isoparaffin, and Cycloalkane Hydrocarbons Content = GT 99 WL% (ASTM D-1319);
CS-C11 Aromatic Hydrocarbon Content = LT 1 WL% (ASTM D-1319);
Average Density at 60°F = 6.476 lbs./gal. (ASTM D-2161);
Aniline Cloud Point Temperature = 155°F (68°C) (ASTM D-811);
Kauri-Buland (KB) Value = 33 (ASTM D-1133);
Dry Point Temperature = 383°F (195°C) (ASTM D-86);
Evaporation Rate = 0.20 when n-Butyl acetate = 1.0;
Heat Value = 19,784 Btu.

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability	Stable.	Hazardous Polymerization	Not expected to occur.
Conditions to Avoid	Keep away from extreme heat, strong acids, and strong oxidizing conditions.		
Materials Incompatibility	Strong acids, alkalis, and oxidizers such as liquid chlorine, other halogens, hydrogen peroxide, and oxygen.		
Hazardous Decomposition Products	No substances are readily identified from composition; but, no degradation data is available.		

SECTION 11: TOXICOLOGICAL INFORMATION

For other health-related information, refer to the Emergency Overview on Page 1 and the Hazards Identification in Section 3 of this MSDS.

Toxicity Data

Stoddard Solvent or Mineral Spirits:
ORAL (LD50): Acute: GT 34,600 mg/kg [Rat].
GAS (LC50): Acute: GT 21,400 mg/m³ for 4 hours [Rat].
DERMAL (LD50): Acute: 15,400 mg/kg [Rabbit].

n-Nonane:
GAS (LC50): Acute: 3,200 ppm for 4 hours [Rat].
INTRAVENOUS (LD50): Acute: 218 mg/kg [Mouse].

Stoddard Solvent or Mineral Spirits is a mild to moderate eye irritant and a skin and respiratory tract irritant. Human volunteers exposed to an airborne concentration of 400 ppm experienced no ill effects. Saturated vapors in air (or AP 8,200 mg/m³) are below the LC50 level in rats.

Based upon laboratory animal studies, repeated direct application of Stoddard Solvent to the skin can produce defatting dermatitis, kidney damage, and changes in blood-forming capacity. Rats developed kidney damage and elevated blood urea nitrogen levels when exposed to a concentration of 1.8 mg/L for 85 days. The kidney damage in rats appeared to involve both the tubules and glomeruli, but only occurred in males; so these effects may not be pertinent to humans. Male rats exposed to airborne concentrations of 100, 150, and 1,500 ppm for 8 hours per day, 5 days per week for 90 days did not develop any functional or histological signs of neurotoxicity. Stoddard Solvent and Mineral Spirits were not mutagenic in the Salmonella/microsome (Ames) assay, the in-vivo mouse bone marrow cell chromosome aberrations assay, and the in-vitro rat sister chromatid exchanges assay.

Rats inhaling n-nonane at an airborne concentration of 1,500 ppm for 7 days displayed mild tremors and loss of coordination. Inhalation of 1,800 ppm for 8 hours per day for 90 days showed animal weight loss or decreased weight gain and changes in the structure of their salivary glands. And, liver damage and an altered response to drugs were seen in rats given n-nonane for 2 to 7 days.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

Ecological effects testing has not been conducted on this material. If spilled, this naphtha, its storage tank water bottoms and sludge, and any contaminated soil or water may be hazardous to human, animal, and aquatic life.

Using Rainbow Trout (*Oncorhynchus mykiss*), similar naphthas showed a 96-hour TLM (Median Toxic Limit) from 10 ppm to 20 ppm in ambient saltwater. 24-hour TLMs resulted in 2,990 ppm and 200 ppm when using Bluegill Sunfish (*Lepomis macrochirus*) and juvenile American Shad (*Squalus cephalus*), respectively. Based upon actual spill incident investigations, similar naphthas have been shown to bioaccumulate in tissues of various fish from a 1 ppm to 10 ppm levels.

Mineral Spirits 66/3**Environmental Fate**

This naphtha is potentially toxic to freshwater and saltwater ecosystems. It will normally float on water with its lighter components evaporating rapidly. In stagnant or slow-flowing waterways, a naphtha hydrocarbon layer can cover a large surface area. As a result, this covering layer might limit or eliminate natural atmospheric oxygen transport into the water. With time, if not removed, oxygen depletion in the waterway might be enough to cause a fish kill or create an anaerobic environment. This coating action can also be harmful or fatal to plankton, algae, aquatic life, and water birds. Additionally, potable water and boiler feed water systems should NEVER be allowed more than 5 ppm contamination from this material.

For additional ecological information concerning components of this product, users should refer to the Hazardous Substances Data Bank® and the Oil and Hazardous Materials/Technical Assistance Data System (OHMTADS) maintained by the U.S. National Library of Medicine. (See Section 2 for components.)

SECTION 13: DISPOSAL CONSIDERATIONS

Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly, it is the responsibility of the user to determine the proper storage, transportation, treatment and/or disposal methodologies for spent materials and residues at the time of disposition.

Maximize material recovery for reuse or recycling. If spilled material is introduced into a wastewater treatment system, chemical and biological oxygen demand (COD and BOD) will likely increase. This material is biodegradable if gradually exposed to microorganisms, preferably in an aerobic environment. In sewage-seeded wastewater, at or below concentrations of 0.2 vol.% of this naphtha, there is little or no effect on bio-oxidation and/or digestion. However, at 1 vol.%, it doubles the required digestion period. Higher concentrations interfere with floc formation and sludge settling and also plug filters or exchange beds. Vapor emissions from a bio-oxidation process contaminated by this material might prove to be a potential health hazard.

Recovered non-usable material may be regulated by US EPA as a hazardous waste due to its ignitibility (D001) characteristics. In addition, conditions of use may cause this material to become a hazardous waste, as defined by Federal or State regulations. It is the responsibility of the user to determine if the material is a RCRA "hazardous waste" at the time of disposal. Transportation, treatment, storage, and disposal of waste material must be conducted in accordance with RCRA regulations (see 40 CFR Parts 260 through 271). State and/or local regulations might be even more restrictive. Contact the RCRA/Superfund Hotline at (800) 424-9348 or your regional US EPA office for guidance concerning case specific disposal issues.

SECTION 14: TRANSPORT INFORMATION**DOT Status**

This material is regulated by the U.S. Department of Transportation (DOT).

Proper Shipping Name

Petroleum distillates, n.o.s. (Nonanes)

This product has a flash point temperature of between 100° and 141°F (38° to 60°C). For bulk shipments, it is classified as a DOT "Flammable Liquid". However, according to 49 CFR 173.120(b)(2) and 173.150(f)(1), this product may be reclassified as a "Combustible Liquid" and exempted from certain transportation-related requirements, such as labeling, when shipped in non-bulk "limited-quantity" containers of less than 119 gallons capacity. According to 49 CFR 173.150(f)(2) and (3), this provision does not apply to "limited-quantities" offered for or transported via vessel or aircraft or products which are defined as DOT "Marine Pollutants". It is recommended that "Flammable Liquid" products which are reclassified be so identified on the bill-of-lading as "Combustible liquid, n.o.s. (Petroleum distillates) or (Nonanes) with identification number "NA1883".

Hazard Class

Class 3: Flammable liquid.

Packing Group(s)

PG III

UNNA ID

UN1268

Reportable Quantity

There are no Reportable Quantity (RQ) substance components in this product which require DOT HAZMAT bill-of-lading display.

Placards

Emergency Response Guide No. 128

HAZMAT STCC No.

49 102 56

MARPOL III Status

Not a DOT "Marine Pollutant" per 49 CFR 171.8.

Mineral Spirits 66/3

SECTION 15: REGULATORY INFORMATION

TSCA Inventory	This product and/or its components are listed on the Toxic Substance Control Act (TSCA) inventory.
SARA 302/304	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for "Extremely Hazardous Substances" listed in 40 CFR 302.4 and 40 CFR 355. No components were identified.
SARA 311/312	The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to this subpart to submit aggregate information on chemicals by "Hazard Category" as defined in 40 CFR 370.2. This material would be classified under the following hazard categories: Fire Hazard, Acute (Immediate) Health Hazard, and Chronic (Delayed) Health Hazard.
SARA 313	This product does not contain any components in concentrations at or above de minimis levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA.
CERCLA	The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center concerning release of quantities of "hazardous substances" equal to or greater than the reportable quantities (RQ's) listed in 40 CFR 302.4. As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically designated in 40 CFR 302.4. There are no chemical substances in this product subject to this statute.
CWA	This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.
California Proposition 65	This product is not known to contain any chemical substances which are known to the State of California to cause cancer, birth defects, or other reproductive harm, and therefore, it is not subject to requirements of California Health & Safety Code Section 25249.5.
New Jersey Right-to-Know Label	For New Jersey labeling refer to components listed in Section 2.
Additional Regulatory Remarks	<p>Under the Federal Hazardous Substances Act, related statutes, and Consumer Product Safety Commission regulations, as defined by 16 CFR 1500.14(b)(3) and 1500.83(a)(13): This product contains "Petroleum Distillates" which may require special labeling if distributed in a manner intended or packaged in a form suitable for use in the household or by children. Precautionary label dialogue should display the following: Contains Petroleum Distillates! May be harmful or fatal if swallowed! Keep Out of Reach of Children!</p> <p>Under Section 12(b) of TSCA: Because it might contain detectable amounts of 1,3,5-Trimethylbenzene (Mesitylene) [CAS No. 105-67-8], this product might be subject to US EPA's one-time only per country export notification requirements.</p>

SECTION 16: OTHER INFORMATION

Refer to the top of Page 1 for the HMIS and NFPA Hazard Ratings for this product.

REVISION INFORMATION

Version Number 3.0
Revision Date 01/11/2001
Print Date Printed on 01/15/2001.

ABBREVIATIONS

AP = Approximately	EQ = Equal	> = Greater Than	< = Less Than	NA = Not Applicable	ND = No Data	NE = Not
ACGIH = American Conference of Governmental Industrial Hygienists	AIHA = American Industrial Hygiene Association					
IARC = International Agency for Research on Cancer	NTP = National Toxicology Program					
NIOSH = National Institute of Occupational Safety and Health	OSHA = Occupational Safety and Health Administration					
NPCA = National Paint and Coating Manufacturers Association	HMIS = Hazardous Materials Information System					
NFPA = National Fire Protection Association	EPA = Environmental Protection Agency					

Material Safety Data Sheet

for

Dolomite

Section I - Material Description

Manufacturer's name and address: Ash Grove Cement Company
13939 N. Rivergate Blvd.
Portland, OR 97203

Emergency Telephone Number: (412) 553-4001 - ALCOA
(503) 286-1677 - ASH GROVE

Technical: (412) 553-2881 - ALCOA

Chemical Name & Formula: Dolomite; Mg CO_3 , Silicon Dioxide, SiO_2
Other Designation: None
CAS No: Dolomite (16389-88-1); Silicon Dioxide (7631-86-9)
Manufacturer: Northwest Alloys, P.O. Box 115, Addy, WA 99101
Product Use: Chemical processing

Revised: January 2003

Section II - Hazardous Ingredients and Occupational Exposure Limits

	(<1 %) % Typical		ACGIH TLV	TWA in mg/mg^3 OSHA PEL
CaCO_3 - MgCO_3	97-100	Amorphous silica	10	6
SiO_2	0-3			
H_2O	Remainder			
LD found for oral route of administration: SiO_2 (amorphous) 3160 mg/kg				

Section III - Physical Data

Physical Form: Solid
Boiling Temperature: NA
Freeze-Melt Temperature: Not determined
Vapor Pressure: NA
Vapor Density: (Air = 1) NA
Evaporation Rate: NA

Specific Gravity: Not determined
Density: 2.87 g/cc
Water Solubility: Slight
pH: 9.60 [50 % weight (gm) to water volume (ml)]
Color: Grayish-white
Odor: None
Odor Threshold: NA
Coefficient of Water/Oil Distribution: Not determined

Section IV - Fire and Explosion Data

Flashpoint: NA
Auto-Ignition Temperature: NA
Flammability Limits in Air/Upper/Lower: NA

Product is non-combustible. Not an explosion hazard. Use fire extinguishing agent suitable for the surrounding fire. Wear NIOSH approved, self-contained breathing apparatus and protective clothing when appropriate.

Section V - Reactivity Data

Material is stable under normal conditions of use, storage, and transportation.

Section VI - Health Hazard Information

This product has not undergone testing for either acute or chronic toxic effects. However, based on its chemical composition, we would expect it to be a low health risk by inhalation so long as the occupational exposure limits specified under Section II are met.

Section VII - Spill, Leak, and Disposal Procedures

Use dry cleanup procedures; avoid dusting. Collect in containers or bags.

If reuse or recycling is not possible, material may be disposed of at a sanitary landfill.

RCRA Hazardous Waste No. Not Federally Regulated

Section VIII - Special Protection and Precautions

Use with adequate ventilation to meet exposure limits as listed in Section II. Where the exposure limit is or may be exceeded, use NIOSH approved respiratory protections. Select appropriate respirator (dust respirator, etc.) based on the concentrations of actual or potential airborne contaminants present.

Section IX - Regulatory Information

Chemical substance components have been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (Title 40 CFR Part 710).

For purposes of SARA III reporting, this substance contains no ingredients listed on CERCLA, Extremely Hazardous, or 313 lists.

The reportable chemical substances in this product are regulated by the OSHA Hazard Communication Standard (29CFR 1910.1200) solely because they are listed by ACGIH. However, they do not fit any of the five proposed hazard categories under SARA Sections 311,312.

D.O.T. Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated Canadian TDG Hazard Class & PIN - Not Regulated

Section X - References

U.S. Dept. Of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances, 1985-86 Edition

Sax, N. Irving: Dangerous Properties of Industrial Materials, Van Nostrand Reinhold Co. Inc, 1984

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

CUSTOMER: LC013815

ORDER #: 01140

BATCH #: 031490021

STICKER #: 031490121

ZONE #: 09

BARCODE #: 9611019095150211312732

PRODUCT NAME: CERTI-SLIDE AERO

graphite spray

MATERIAL SAFETY DATA SHEET: CERTI-SLIDE AERO

Page: 1

(10-000000- -529J)

DATE OF ISSUE
1/24/2003SUPERSEDES
4/19/2002

SECTION I - GENERAL INFORMATION

Chemical Name & Synonyms
N/ATrade Name & Synonyms
CERTI-SLIDE AEROChemical Family:
AQUEOUS GRAPHITE MIXTURE

Formula Mixture --> X

Manufacturer's Name:
CERTIFIED LABS, DIV. OF NCH CORP.Address:
BOX 152170
IRVING, TEXAS 75015Prepared By:
C Williamson/ChemistProduct Code Number
529JEmergency Phone Number
800-424-9300

SECTION II - HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS

Chemical Name (Ingredients)

ALKALI SILICATE
GRAPHITE
PROPANE
ISOBUTANE

Hazard	TLV	PEL	STEL
IRRITANT	N/E 1	N/E 2	N/E
IRRITANT	2 MG/M3 2	3 MG/M3 2	N/E
FLAM/ASPHY	2500 PPM 1	1000 PPM 2	N/E
FLAM/ASPHY	N/S 1	N/E 2	N/E

CAS #
TRADE SECRET
7782-42-5
74-98-6
75-28-5

SECTION III - PHYSICAL DATA

Boiling Point (F):	212°	Specific Gravity (H2O=1):	1.08
Vapor Pressure (MM HG):	17.99	Color:	DK GRAY TO BLACK
Vapor Density (Air=1):	1.4	Odor:	AMMONIA
PH @ 100% :	10.8	Clarity:	OPAQUE
% Volatile by Volume:	>85	Evaporation Rate (BU A/C=1):	0.72
H2O Solubility:	APPRECIABLE	Viscosity:	SLIGHT VISCOUS

SECTION IV - FIRE AND EXPLOSION HAZARD

Flash Point >200°F / SETAPLASH	Flammable Limits PROPANE/ISOBUTANE	LEL 1.8%	UEL 9.5%
-----------------------------------	---------------------------------------	-------------	-------------

Extinguishing Media
X ---Foam X ---Alcohol Foam X ---CO2 X ---Dry Chemical X ---Water Spray ---OtherSpecial Fire Fighting Procedures:
FIREFIGHTERS SHOULD WEAR A SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR. EXTINGUISHING MEDIA SHOULD BE CHOSEN BASED ON THE NATURE OF THE SURROUNDING FIRE. COOL FIRE-EXPOSED CONTAINERS WITH WATER SPRAY TO PREVENT BURSTING.Unusual Fire and Explosion Hazards:
FLAME EXTENSION IS 0 INCHES, BURNBACK IS 0 INCHES.

Aerosol Level (NFPA 30B): 1

NFPA 704 Hazard Rating (0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme)
1 ---Health 1 ---Flammability 0 ---Instability ---Special

SECTION V - HEALTH HAZARD DATA

Threshold Limit Value:
NOT ESTABLISHED FOR MIXTURE. SEE SECTION II.

Effects of Overexposure:

-Acute (Short Term Exposure)
SKIN CONTACT: MAY CAUSE IRRITATION SEEN AS ITCHING AND REDNESS. PRODUCT MAY BE ABSORBED THROUGH THE SKIN IN HARMFUL AMOUNTS.
EYE CONTACT: MAY CAUSE IRRITATION SEEN AS STINGING, TEARING AND REDNESS.
INHALATION: MAY CAUSE RESPIRATORY IRRITATION SEEN AS COUGHING AND SNEEZING.
INGESTION: MAY CAUSE IRRITATION WITH POSSIBLE NAUSEA, VOMITING AND DIARRHEA.-Chronic (Long Term Exposure)
NO CHRONIC EFFECTS KNOWN. MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE ARE PRE-EXISTING RESPIRATORY AND SKIN CONDITIONS SUCH AS ASTHMA, EMPHYSEMA AND ATITIS.
TARGET ORGANS: NONE KNOWN.

Primary Routes of Entry: ---Inhalation ---Ingestion X ---Absorption

Emergency and First Aid Procedures:
-Inhalation:

SECTION X - STORAGE AND HANDLING INFORMATION (Continued)

SECTION XI - REGULATORY INFORMATION

Chemical Name
None

CAS Number

Upper & Limit

The ingredients listed above are subject to the reporting requirements of 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Please call 1-800-527-9919 for additional information if you are a California customer.
This MSDS is not intended for users in the state of California.

SECTION XII - REFERENCES

1. THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS AND BIOLOGICAL EXPOSURE INDICES, ACGIH, 2002.
 2. OSHA PEL.
 3. REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES, CCINFODisc, 2002.
 4. VENDOR'S MSDS.
- ALL THE COMPONENTS OF THIS PRODUCT ARE IN COMPLIANCE WITH THE TOXIC SUBSTANCES CONTROL ACT (TSCA) AND ARE EITHER LISTED ON THE TSCA INVENTORY OR OTHERWISE EXEMPTED FROM LISTING.

IRR:IRRITANT, FLAM/FLAMM:FLAMMABLE, COMB:COMBUSTIBLE, CORR:CORROSIVE CARC:CARCINOGENIC, TOX:TOXIC, N/A:NOT APPLICABLE, N/E:NOT ESTABLISHED,
COC:CLEVELAND OPEN CUP, PMCC:PENSKY-MARTIN CLOSED CUP, TCC:TAGLIABUE CLOSED CUP,
LEL:LOWER EXPLOSION LIMIT, UEL:UPPER EXPLOSION LIMIT, NFPA:NATIONAL FIRE PROTECTION ASSOCIATION, IARC:INTERNATIONAL AGENCY FOR THE RESEARCH ON
CANCER, NTP:NATIONAL TOXICOLOGY PROGRAM, OSHA:OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION, ACGIH:AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL
HYGIENISTS, TLV:THRESHOLD LIMIT VALUE, PEL:PERMISSIBLE EXPOSURE LIMIT, STEL:SHORT-TERM EXPOSURE LIMIT, MLD:MILD, MOD:MODERATE, SEV:SEVERE,
MUT:MUTAGENIC, ASPHYX:ASPHYXANT, PNOS:PARTICULATES (INSOLUBLE) NOT OTHERWISE SPECIFIED, SDT:STANDARD DRAIZE TEST, ORL:ORAL, IHL:INHALATION,
HMN:HUMAN

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED
REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

CERTIFIED LABS, DIV. OF NCH CORP. assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the
product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage, or disposal of the
product.

2/13/04



Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Common Name	MOLUB-ALLOY 491-C DRY FILM LUBRICANT	Code	75060-AH
Supplier	CASTROL INDUSTRIAL NORTH AMERICA INC. 1001 WEST 31ST STREET DOWNERS GROVE, IL 60515-1280 Product Information: 630 241-4000	Validation Date	12/12/2001.
Synonym	Not available.	Print Date	12/12/2001.
Trade name	MOLUB-ALLOY IS REGISTERED IN THE U.S. PATENT AND TRADEMARK OFFICE.	Responsible Name	Product Stewardship
Material Uses	Not available.	In Case of Emergency	CHEMTREC (800) 424-9300
Manufacturer	CASTROL INDUSTRIAL NORTH AMERICA INC 1001 WEST 31ST STREET DOWNERS GROVE, IL 60515-1280		

Section 2. Composition, Information on Ingredients

Name	CAS #	% by Weight	Exposure Limits
1) MOLYBDENUM SULFIDE (MOS2)	1317-33-5	20-25	ACGIH TLV (United States, 2000). TWA: 10 mg/m ³ OSHA Final Rule (United States, 1989). TWA: 10 mg/m ³
2) PROPRIETARY THICKENER	Access # 234	1-5	ACGIH (United States). TWA: 10 mg/m ³ OSHA (United States). TWA: 15 mg/m ³
3) GRAPHITE	7782-42-5	1-5	ACGIH (United States, 1994). TWA: 2 mg/m ³ Form: Dust OSHA Final Rule (United States, 1989). TWA: 2.5 mg/m ³ Form: Respirable dust OSHA (United States). TWA: 3 mg/m ³ Form: Respirable fraction OSHA (United States). CEIL: 3 mg/m ³ Form: Respirable fraction

Section 3. Hazards Identification

Physical State and Appearance	Solid.
Ammoniacal. Odor	
Black. Paste.	
Emergency Overview	CAUTION! MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. Avoid contact with eyes, skin and clothing. Do not breathe vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Do not ingest. Not available.
Routes of Entry	Absorbed through skin. Eye contact. Inhalation. Ingestion.

Continued on Next Page

Potential Acute Health Effects

Eyes Moderately irritating to the eyes.

Skin Moderately irritating to the skin.

Inhalation Moderately irritating to the respiratory system.

Ingestion Harmful if swallowed.

No additional remark.

Potential Chronic Health Effects

CARCINOGENIC EFFECTS: Not known to be carcinogen.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

Medical Conditions

Repeated or prolonged exposure is not known to aggravate medical condition.

Aggravated by Overexposure:

Overexposure

Not available.

/Signs/Symptoms

See Toxicological Information (section 11)

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
Notes to Physician	Not available.

Section 5. Fire Fighting Measures

Flammability of the Product	May be combustible at high temperature.
Autoignition Temperature	Not available.
Flash Points	Not available.
Flammable Limits	Not available.
Products of Combustion	These products are carbon oxides (CO, CO ₂), sulfur oxides (SO ₂ , SO ₃ ...). Some metallic oxides. Molybdenum(Mo) Ammonia.
Fire Hazards in Presence of Various Substances	Not available.
Explosion Hazards in Presence of Various Substances	Non-explosive in presence of open flames, sparks and static discharge, of shocks, of heat.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet. Water or foam may cause frothing. Cool containers with flooding amounts of water from as far a distance as possible. Wear full protective equipment.
Protective Clothing (Fire)	Be sure to use an approved/certified respirator or equivalent.

Continued on Next Page

**MOLUB-ALLOY 491-C DRY FILM
LUBRICANT**

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**Special Remarks on Fire
Hazards**

Products of Combustion: Carbon Dioxide (CO₂), sulfur oxides (SO₂, SO₃...), Molybdenum(Mo), Ammonia..
NFPA health hazard rating of 2 is assigned due to the toxicity of thermal decomposition products (oxides of sulfur); otherwise, the material itself warrants a health hazard rating of 1.

**Special Remarks on Explosion
Hazards**

Not available.

Section 6. Accidental Release Measures

Small Spill and Leak

Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary, neutralize the residue with a dilute solution of acetic acid. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill and Leak

Use a shovel to put the material into a convenient waste disposal container. If necessary, neutralize the residue with a dilute solution of acetic acid. Do not allow to enter drains or watercourses.

Section 7. Handling and Storage

Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Do not ingest.

Keep container tightly closed. Keep container in a cool, well-ventilated area. Avoid contact with strong oxidizers, excessive heat, sparks or open flame. Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose of containers unless adequate precautions are taken against these hazards.

Section 8. Exposure Controls, Personal Protection

Engineering Controls

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection

Eyes Safety glasses with side shields.

Body Synthetic apron.

Wear appropriate protective clothing to prevent skin contact. Ensure that eyewash station and safety shower is proximal to the work-station location.

Respiratory Wear appropriate respirator when ventilation is inadequate.

Hands Impervious gloves.

Protective gloves should be worn during handling.

Feet Not applicable.

**Protective Clothing
(Pictograms)**



**Personal Protection in Case of
a Large Spill**

Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Product Name

Exposure Limits

Continued on Next Page

1) MOLYBDENUM SULFIDE (MOS2)	ACGIH TLV (United States, 2000). TWA: 10 mg/m ³ OSHA Final Rule (United States, 1989). TWA: 10 mg/m ³
2) PROPRIETARY THICKENER	ACGIH (United States). TWA: 10 mg/m ³ OSHA (United States). TWA: 15 mg/m ³
3) GRAPHITE	ACGIH (United States, 1994). TWA: 2 mg/m ³ Form: Dust OSHA Final Rule (United States, 1989). TWA: 2.5 mg/m ³ Form: Respirable dust OSHA (United States). TWA: 3 mg/m ³ Form: Respirable fraction OSHA (United States). CEIL: 3 mg/m ³ Form: Respirable fraction

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Solid.	Odor	Ammoniacal. Odor
Boiling/Condensation Point	Not available.	Taste	Not available.
Melting/Freezing Point	Not available.	Color	Black. Paste.
pH Concentrate	11.5 [Basic.]		
pH Dilution % and Value	Not available.		
Critical Temperature	Not available.		
Specific Gravity	1.3 to 1.5 (Water = 1)		
Vapor Pressure	Not available.		
Vapor Density	Not available.		
Volatility	Not available.		
Odor Threshold	Not available.		
Evaporation Rate	Not available.		
VOC	Not available.	VOC Method	Not available.
Viscosity	Not available.		
Dispersion Properties	See solubility in water.		
Solubility	Easily soluble in hot water. Partially soluble in cold water.		
Physical Chemical Comments	Not available.		

Continued on Next Page

Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Conditions of Instability	Avoid excessive heat.
Incompatibility with Various Substances	Reactive with oxidizing agents, metals, acids.
Hazardous Decomposition Products	carbon oxides (CO, CO ₂), sulfur oxides (SO ₂ , SO ₃ ...), Molybdenum(Mo), Ammonia.
Hazardous Polymerization	Will not occur.

Section 11. Toxicological Information

Toxicity to Animals	LD50: Not available. LC50: Not available.
Chronic Effects on Humans	CARCINOGENIC EFFECTS: Not known to be carcinogen. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available.
Other Toxic Effects on Humans	Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation (lung irritant).
Special Remarks on Toxicity to Animals	Not available.
Special Remarks	No additional remark.
Special Remarks on Other Toxic Effects on Humans	No additional remark.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD and COD	Not available.
Biodegradable/OECD	Not available.
Mobility	Not available.
Products of Degradation	These products are carbon oxides (CO, CO ₂) and water, sulfur oxides (SO ₂ , SO ₃ ...). Some metallic oxides. Molybdenum(Mo) Ammonia.
Toxicity of the Products of Biodegradation	Not available.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Information	Type: Non-hazardous chemical waste. Location: not available Classification: not available Disposal.: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Storage: not available Recycling: not available
Wear appropriate protective clothing to prevent skin contact. Eliminate all ignition sources. Stop leak if without risk. Do not allow to enter drains or watercourses. Absorb with an inert material and put the spilled material in an appropriate waste disposal.	

Continued on Next Page

**MOLUB-ALLOY 491-C DRY FILM
LUBRICANT**

Page: 6/7

RCRA Waste Code(s)

Waste Stream Not available.

Consult your local or regional authorities.

Section 14. Transport Information

DOT Classification - Not a DOT controlled material (United States).

Not regulated.

Marine Pollutant Not pollutant.

Special Provisions for
Transport NOT REGULATED.

ADR/RID Classification Not available.

IMO/IMDG Classification Not available.

ICAO/IATA Classification Not available.

Section 15. Regulatory Information

U.S. Federal Regulations TSCA 4(a) final test rules: ISOPROPYL ALCOHOL
TSCA 8(d) H and S data reporting: ISOPROPYL ALCOHOL: 1986
TSCA 12(b) one time export: ISOPROPYL ALCOHOL
SARA 302/304 emergency planning and notification: No products were found.
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: MOLUB-ALLOY 491-C DRY FILM LUBRICANT: immediate health hazard.
SARA 313 toxic chemical notification and release reporting: No products were found.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.
Clean air act (CAA) 112 accidental release prevention: No products were found.
Clean air act (CAA) 112 regulated toxic substances: No products were found.
Clean air act (CAA) 112 regulated flammable substances: No products were found.

State Regulations Pennsylvania RTK: GRAPHITE, NATURAL (generic environmental hazard)
Massachusetts RTK: MOLYBDENUM SULFIDE; GRAPHITE, NATURAL
New Jersey: MOLYBDENUM SULFIDE
California prop. 65: No products were found.

Inventory Lists TSCA 8(b) inventory: All components of this product are listed on (or meet the exemption requirements of) the applicable inventory list.
CEPA DSL: All components of this product are listed on (or meet the exemption requirements of) the applicable inventory list.
Australia (NICNAS): One or more of the materials contained in this product may not appear on the applicable inventory list. Please consult the manufacturer for additional information.
Korea (TCCL): One or more of the materials contained in this product may not appear on the applicable inventory list. Please consult the manufacturer for additional information.
Philippines (RA6969): One or more of the materials contained in this product may not appear on the applicable

Continued on Next Page

inventory list. Please consult the manufacturer for additional information.

MITI: One or more of the materials contained in this product may not appear on the applicable inventory list. Please consult the manufacturer for additional information.

EINECS: One or more of the materials contained in this product may not appear on the applicable inventory list. Please consult the manufacturer for additional information.

Section 16. Other Information

Label Requirements MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Hazardous Material Information System (U.S.A.)

Health	1
Fire Hazard	1
Reactivity	0
Personal Protection	C

**National Fire
Protection Association
(U.S.A.)**



References Not available.

**Other Special
Considerations** No additional remark.

Validated by Product Stewardship on 12/12/2001.

Printed 12/12/2001.

CHEMTREC (800) 424-9300

Notice to Reader

*To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.*